

LECLERC CREEK RANGE ALLOTMENT MANAGEMENT PLAN:
Biological Assessment of Effects to Terrestrial Wildlife

USDA Forest Service, Colville National Forest
Newport-Sullivan Lake Ranger Districts
12641 Sullivan Lake Road
Metaline Falls, WA 99153

March, 2015



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The information included in this report is based upon field reviews of the project area, timber stand exams, aerial photo interpretation, spatial analysis using a geographic information system (GIS) and my knowledge of local site conditions and species / habitat relationships. By signature below, I certify that this analysis follows the policy direction found in Forest Service Manual 2620, 2630, and 2670.

Prepared by: /s/ Michael A. Borysewicz

Date: March 20, 2015

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Reply To: 2430 / 2672

Date: March 20, 2015

Subject: LeClerc Creek Range Allotment Management Plan:
Biological Assessment of Effects to Terrestrial Wildlife

To: Gayne Sears, District Ranger

I. INTRODUCTION

The Rescission Act of 1995 (Public Law 104-19) requires the Forest Service to complete an environmental analysis for each livestock grazing allotment on National Forest System (NFS) lands by 2019. New grazing permits should be issued unless there are significant environmental concerns. In order to comply with the Act, an update of the Allotment Management Plan for the LeClerc Creek Range Allotment is necessary. The Colville National Forest (CNF) proposes four different alternatives for managing cattle grazing on this allotment. This document is an analysis of the effects of the proposed alternatives on threatened, endangered and sensitive terrestrial wildlife species. Effects to management indicator species listed for the Forest, and to landbirds are also addressed here.

II. ALLOTMENT DESCRIPTION

The LeClerc Creek Range Allotment is located east of the Pend Oreille River about three miles southeast of the town of Ione, Washington. The allotment includes National Forest System lands, Washington State Department of Natural Resources lands, and private lands mostly owned by Stimson Lumber Company. The allotment includes portions of the West, Middle and East Branches of LeClerc Creek watersheds. Topography in the area is mountainous with gentle to moderately steep slopes. The area is predominantly timbered. A few meadows exist in the allotment, typically associated with old homesteads or mill sites (ex. Fourth of July and Hanlon meadows).

A. History

Forest Service records of grazing in the LeClerc Creek Range Allotment date back only as far as 1940. However, enough history is known to assume that grazing occurred in the area during the homesteading period from about the 1890s through the 1930s. Homesteaders created a number of small clearings and enlarged existing, natural meadows. Most of these openings remain on the landscape. The Forest Service purchased the lands that make up the present day allotment during the Great Depression, through the Resettlement Act of 1938. Initially, the allotment was one contiguous unit grazed by multiple permittees. Then it became three separate units; the Fourth of July, Dry Canyon, and LeClerc Allotments. In 1977 these three allotments were combined into the present day LeClerc Creek Range Allotment that is currently managed by one permittee.

An Animal Unit Month (AUM) is defined as the amount of forage required to feed a 1,000 pound cow for a one month period. The AUMs authorized for the allotment has varied widely over its documented history, especially in the 1930's through the 1950's. In 2010, the authorized AUMs dropped from 731 (138 cow / calf pairs) to 535 (101 cow / calf pairs), where it remains today. This reduction in stocking was due to a change in ownership of the major private in-holdings in the allotment. The present owner of these lands (Stimson Lumber Company) opted not to renew the grazing lease. This allotment is a cattle and horse grazing allotment that is currently permitted to the Fountain Ranch.

B. Current Allotment Management and Conditions

The Colville National Forest Land and Resource Plan (USDA 1988), hereafter referred to as the Forest Plan, divided the Forest up into discrete "Management Areas" (MAs). Each MA has its own management emphasis, goals, and standards and guidelines (Forest Plan pages 4-77 through 4-108). Livestock grazing is a permitted activity in all MAs, but if grazing conflicts with the primary emphasis, grazing practices should be modified. The following table displays the MAs found within the LeClerc Creek Range Allotment.

Table 1: Forest Plan management areas (MAs) in the LeClerc Creek Range Allotment

Management area	Acres / percent of LeClerc Allotment	MA emphasis
MA-1	345 (1%)	Old-growth dependent species habitat
MA-2	13 (<1%)	Woodland caribou habitat
MA-4	22 (<1%)	Research natural area (Bunchgrass Meadows)
MA-5	2,101 (9%)	Scenic / Timber
MA-6	26 (<1%)	Scenic / Big game winter range
MA-7	7,767 (33%)	Wood / Forage
MA-8	4,710 (20%)	Big game winter range
MA-11	3,926 (17%)	Semi-primitive, non-motorized recreation
Private, state	4,503 (19%)	
Total	23,413 (100%)	

There are five separate pastures in this allotment; Dry Canyon, Mineral Creek, Upper Bunchgrass, Lower Bunchgrass, and Fourth of July. Cattle move between and within pastures on roads, and on a few stock trails / travel-ways maintained by the permittee. Cattle movement between pastures is intended to be controlled by existing sections of fencing, cattle guards in roadbeds, and by natural barriers such as steep slopes, rock features, and heavily wooded areas.

1. Grazing Schedule - The allotment is currently managed under a "deferred rotation" grazing system. This means that one portion of the allotment is grazed early in the season, thereby deferring grazing on the remainder of the allotment to allow plant growth and seed production to occur. This strategy helps to maintain plant health and vigor, as well as plant species diversity. The current timing and sequence of pastures grazed is displayed in the following table.

Table 2: LeClerc Creek Range Allotment - existing grazing schedule and pasture data

Pasture	Approximate season of use	Days of use	Approx. acres
Lower Bunchgrass	June 1 - July 6	36	5,621
Mineral Creek	July 7 - Sept. 15	71	5,603
Upper Bunchgrass			6,692
Dry Canyon	September 16 - 30	15	3,037
Fourth of July			2,460
Total	June 1 - Sept. 30	122	23,413

2. Available Forage - Livestock forage plants within the allotment include non-native perennial grasses such as Kentucky bluegrass, redtop, orchard grass, and timothy, and to a lesser extent, native grasses such as bluebunch wheatgrass, Idaho fescue and pinegrass. Upon utilization of these primary forage plants, cattle begin to graze on secondary forage plants such as common dandelion and other forbs, sedges, and woody plants. Livestock use of shrubs typically occurs later in the season, when grasses have cured and lost most of their nutritional value.

There are two major types of forage producing lands present on the CNF and within the LeClerc Creek Range Allotment. They are “semi-permanent range” and “transitory range”. Semi-permanent range includes old homestead meadows or mill sites, and open forest stands with a grass / forb understory. These areas should provide forage for livestock over periods of 20 years or more. They are the “key grazable areas” where most of the available forage plants are found. Transitory range areas are where timber harvest or controlled burning has removed enough trees and shrubs to allow herbaceous vegetation to be released on the forest floor. Transitory range areas are temporary in nature. They are able to produce green forage for a period of 3 - 20 years before trees once again dominate the site. Transitory range areas act to provide additional forage for livestock in upland areas, thereby reducing grazing pressure on riparian habitats.

According to past and recent monitoring data, grazing use over most of the allotment is occurring within the acceptable use levels prescribed by the Forest Plan (pers. comm. with C. Bolyard 2013).

3. Management Challenges

Livestock Movement Controls - Over the last few decades, timber harvest and new road construction has opened up once dense timber stands and created new movement pathways for livestock in this allotment. As a result, existing fencing and other control structures are no longer adequate to prevent animals from moving between pastures, and re-grazing preferred sites already used to the proper level. Cattle are also finding ways to move off the allotment altogether.

Impacts to Riparian Areas - In discrete local areas, livestock trailing on stream banks has caused bank sloughing and sediment input to streams, adversely impacting the water quality (pers. comm. with R. Lawler 2014). Riparian shrubs have been reduced in density and diversity on the most heavily used sites. These effects are most apparent in the Lower Bunchgrass Pasture along portions of the Middle Branch LeClerc Creek from the northeast quarter of Section 16 (T. 36N, R. 44E) down to the confluence with the East Branch LeClerc Creek. In the late 1990s, the CNF and

Kalispel Tribe fenced portions of these sites to exclude livestock and improve riparian habitat conditions.



Figure 1. Livestock browsing of riparian shrubs is suppressing regeneration and reducing shrub density / diversity on this reach of the Middle Branch LeClerc Creek (T. 36N, R. 44E, Sec. 29).

Noxious Weeds - Where livestock use is concentrated in time and space, areas of bare soil may develop, potentially providing favorable sites for the establishment of noxious weeds. Weed seeds may be transported on the fur of livestock, and deposited in their feces. Noxious weeds compete with green forage plants for water, sunlight and soil nutrients. Virtually all of the meadows and most road shoulders on the allotment have some level of weed infestation. Chief invaders include hawkweeds and knapweeds. Other notable species include dalmation toadflax, sulfur cinquefoil, common tansy, hound's tongue, St. John's wort and various thistles. In recent years the Forest Service has treated most of these sites on NFS lands with herbicides. There is no apparent commitment to weed prevention, control, or monitoring on state or private lands on the allotment.

Meadow Encroachment - Forage quantity in homestead and other meadows has declined due to conifer encroachment into some of these sites. Encroaching conifer trees can shade out existing forage plants and eventually convert a meadow into forestland. Livestock grazing greatly slows,

but will not completely halt the pace of this natural succession. In recent years, the Forest Service has attempted to maintain Fourth of July Meadow by mechanically removing conifers from this site.



Figure 2. Removing encroaching conifers to maintain Fourth of July Meadow in an open condition (T. 35N, R. 44E, Section 4, SW ¼).

III. PROPOSED ALLOTMENT MANAGEMENT ALTERNATIVES

A. Alternative A - authorize grazing under current management practices (“no change” alternative)

This alternative would authorize grazing under the existing management system described earlier. There would be no change to existing allotment or pasture boundaries, season of use, and permitted numbers of livestock. No new range improvements would be installed, with the exception of a riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project.

B. Alternative B - do not authorize grazing (“no action” alternative)

Under this alternative, livestock grazing would be discontinued on the allotment within three grazing seasons. With this decision, the forest supervisor could choose to permanently close the allotment, or place the allotment in “vacant” status. In the latter case, the allotment could be re-opened in the future if that action is justified under a new National Environmental Policy Act (NEPA) review.

Once the existing allotment permit is terminated, range improvements (ex. fencing) would no longer be the responsibility of the permittee to maintain. These improvements could be removed as needed by the Forest Service as funding becomes available.

C. Alternative C - authorize grazing, but with modifications / adaptive management

This alternative would reauthorize grazing on the allotment with modifications to the existing permit to address management and resource concerns. Changes to the boundaries, administration, and management of the allotment would occur as follows.

1. Monitoring and Adaptive Management - The range specialist or other range staff would coordinate monitoring of riparian and upland habitats, compliance, and forage utilization, as described in the monitoring and adaptive management plan (Appendix D). If monitoring indicates that standards in the plan are not being met, adjustments in the way the allotment is managed would be initiated. These could include a change in the number of authorized cow / calf pairs, a change in the grazing season, changes in the dates of authorized use in a given pasture, new range improvements, etc.

2. Livestock Numbers - Continue to authorize up to 101 cow / calf pairs to graze the allotment, as is allowed under the present permit. Permitted stock numbers could change in the future if there is a demonstrated need based on monitoring of forage utilization, impacts to riparian or other natural or cultural resources, etc.

3. Allotment / Pasture Boundary Changes

Fourth of July Pasture - Remove this pasture and associated improvements from the allotment. Presently it is not contiguous with the rest of the allotment, so cattle must be trailed outside the allotment boundary to access the pasture. Recent timber harvest on state lands in the pasture has opened up once dense stands of trees, and rendered existing movement controls ineffective. Substantial investments in fencing and other infrastructure would be needed to prevent cattle movement off the pasture and consequently, off the allotment.

Lower Bunchgrass Pasture - Move the southeastern boundary of this pasture to the west side of the Middle Branch LeClerc Creek, effectively restricting cattle access from approximately 2.3 miles of the creek. Shift the southern boundary of the pasture to the north, effectively restricting cattle access from an additional 0.5 mile of creek and areas of deciduous scrub / shrub wetlands, in order to address resource concerns in this area. Move the western pasture boundary to the ridgeline east of Forest Road (FR) 1935105, and add the area between the old and new pasture boundaries to the Mineral Creek Pasture.

Dry Canyon Pasture - Connect this pasture to the rest of the allotment by adding the area between the West Branch LeClerc Road (County Road 3503) and the Lower Bunchgrass Pasture. The purpose of this action would be to allow the permittee to trail his cows between the two pastures on existing roads, without being outside the allotment.

Upper Bunchgrass and Mineral Creek Pastures - Move the northern boundary of these pastures from Molybdenite Ridge south to where the slope begins to flatten out. This boundary shift would better represent the area that is actually used by / accessible to cattle and would address issues of concern to the Kalispel Tribe. Use new fence sections, piled down woody material, or other means to block any existing stock trails or other paths that cattle could use to drift outside the new allotment boundary.

4. Grazing Schedule - Push back the turn-on date for the allotment from June 1 to June 15. This would provide an extra two weeks during late spring for grizzly bears, elk, and other wildlife to utilize green forage resources free from competition and disturbance from livestock. The normal turn-off date for the allotment would then be extended to October 15, two weeks later in the fall. The end of the normal use period could change if there is a demonstrated need based on monitoring data collected.

As is presently the case, manage the allotment on a deferred rotation grazing system. The following table displays the approximate timing of grazing, and the changes to the pasture acreages from the existing condition.

Table 3: LeClerc Creek Range Allotment - Alternative C grazing schedule and pasture data

Pasture	Approximate season of use	Days of use	Approx. acres	Acreage change from existing
Lower Bunchgrass	June 15 – July 21	37	4,372	- 1,249
Mineral Creek	July 22 – Sept. 30	71	4,838	- 765
Upper Bunchgrass			5,411	- 1,281
Dry Canyon	October 1 – 15	15	6,018	+ 2,981
Fourth of July	pasture dropped with this alternative			- 2,460
Total	June 15 – Oct. 15	123	20,639	- 2,774

5. Range Improvements - The following improvements would be completed to better control and distribute livestock across the allotment, and reduce local impacts to riparian areas and other habitats.

New Allotment / Pasture Controls - Install fencing on the new allotment / pasture boundaries as needed. To the extent feasible, incorporate cliffs, talus, rock outcrops, steep side-hills, and dense forest stands into the new boundaries. These features act as natural barriers to cattle movement. The intent would be to minimize yearly fence maintenance needs while effectively blocking drift between pastures, or off the allotment.

Where continuous forest stands are used as a pasture / allotment “boundary”, survey the stands for any trails that cattle could potentially use to drift off the pasture / allotment. Take steps to effectively block these trails with sections of fencing, piled slash, felled “jackpots” of trees, or other means. In this manner, block existing paths where cattle presently drift between the Mineral Creek and Lower Bunchgrass Pastures in T. 36N, R. 44E, Section 8. Improve the existing fence section in this area that crosses the West Branch LeClerc Creek.

Unnecessary Fencing - As funding becomes available, remove existing, old fence sections on changed allotment / pasture alignments. Remove the existing drift fence outside the allotment on the East Branch LeClerc Creek. This work could be accomplished with Forest Service employees or volunteers.

Sensitive Plant Enclosure - Install fencing around a wet meadow to protect a sensitive plant population in T. 36N, R. 44E, Section 20, NW of the SE.

Diamond City Corral - Re-construct a wooden chute for loading / off-loading cattle from stock trucks in T. 36N, R. 44E, Section 18, SW of the SE. If needed, expand the catch pen fences. The permittee would use this corral to stockpile groups of cows for transfer to the Dry Canyon Pasture (he presently uses the large holding pen in Hanlon Meadows for this purpose).

Cattle Guards - Install a new cattle guard on FR 1935011 near the eastern edge of Section 10 (T. 36N, R. 44E). Construct fence segments from either side of the cattle guard to control points such as dense timber or rock outcrops. This action is necessary to prevent cattle from using the road to move off the allotment.

Move the existing cattle guard on the Middle Branch LeClerc Road (FR 1935) north to the new allotment boundary in T. 36N, R. 44E, Section 20, SE ¼. Tie the structure in to the new allotment boundary fencing.

Install two new cattle guards on the Middle Branch LeClerc Road where the road crosses through a section of Stimson land in T. 36N, R. 44E, Section 21, NW ¼. Tie these structures in to new pasture fencing along the section boundaries

Install a new cattle guard in the Paupac Road (FR 1936) in the Coyote Hill area. Construct fence segments from either side of the cattle guard to control points, as needed. This action is necessary to prevent cattle drift up this road and off the allotment.

If monitoring discloses that cattle are using FR 1935 to drift off the allotment towards Bunchgrass Meadows, install a cattle guard and wing fencing on the road at the most appropriate location to block this drift.

Water Troughs - Provide off-stream watering opportunities for livestock by developing four water troughs in the Lower Bunchgrass Pasture where there are small springs or other water sources. If there is available water in upland portions of this pasture, livestock could make better use of upland forage plants and spend less time in lowland riparian habitats. Approximate locations are as follows;

T. 36N, R. 44E, Section 8, NW of the SW
T. 36N, R. 44E, Section 10, NW of the SW
T. 36N, R. 44E, Section 16, NW of the SE
T. 36N, R. 44E, Section 20, SE of the NW

If monitoring of riparian areas discloses a need for additional water developments, the following locations could be assessed:

T. 36N, R. 44E, Section 5, SE of the SE
T. 36N, R. 44E, Sections 7, NE of the NE
T. 37N, R. 44E, Section 27, NW of the SE
T. 37N, R. 44E, Section 30, SW of the NE

Hardened Stream Crossings - These are sites where livestock can drink water and cross streams with minimum impacts to riparian resources. Fencing or natural barriers confine cattle access to a narrow, hardened (usually with rock) portion of stream bottom, thereby limiting sediment input to the water column.

Harden the existing stream crossing on the Middle Branch LeClerc Creek within the livestock holding pen in T. 36N, R. 44E, Section 20. Extend the existing riparian exclosure fencing at this site to tie into the crossing. Develop a new hardened crossing on Mineral Creek in T. 37N, R. 44E, Section 33, SW of the SW.

Maintain / improve two existing hardened crossings / water gaps;

T. 36N, R. 44E, Section 20, SE of the SE (Middle Branch LeClerc Creek)
T. 37N, R. 44E, Section 32, SE of the SW (Whiteman Creek)



Figure 3. Hardened stream crossing / water gap on the Middle Branch LeClerc Creek in T. 36N, R. 44E, Section 16, SE ¼.

6. New Access Route to Hanlon Meadow

This meadow is located in the Lower Bunchgrass Pasture in T. 36N, R. 44E, Sections 20 and 29. It was the site of an old Forest Service guard station in the 1940s. It is now a popular dispersed camping area in the summer and fall. At the north end of the meadow is a livestock loading chute and large holding pen which the permittee currently uses to stockpile cows prior to turning them onto the allotment, or when rounding them up later in the season.

An approximately 800 foot long section of the old Middle Branch LeClerc Road (Forest Road 1935) presently provides road access to the meadow. This road segment encroaches on a scrub / shrub wetland on the Middle Branch LeClerc Creek. For this reason, the road segment would be obliterated to restore the hydrologic integrity of the wetland. A new access route to the meadow would be provided via Forest Road (FR) 1935116. A short spur road (approximately 600 feet) would be built from FR 1935116 to the meadow. The gate that is presently on the entrance of FR 1935116 would then be moved approximately 200 feet up the road, in order to maintain open road access to the meadow.

D. Alternative D - authorize grazing, but with modifications / adaptive management

This alternative would incorporate most of the elements of Alternative C with the following changes.

1. Allotment / Pasture Boundary Changes

Hanlon Meadow Holding Pen - This is an existing fenced enclosure of the northern half of Hanlon Meadow (T. 36N, R. 44E, Section 20, SE ¼). Presently the permittee uses this enclosure as the site where cows are first transferred to the allotment at the start of the grazing season, and allowed to pair up before they are released to the greater Lower Bunchgrass Pasture. The permittee also uses the holding pen to stockpile groups of cows as he rounds up his herd for transfer to Dry Canyon Pasture in the fall. Livestock are only in the pen for a number of days at the start, and then again towards the end of the grazing season.

With Alternative D, identify the holding pen as a separate pasture of the allotment and monitor forage utilization to standards within the pen. Once grazing standards are met, remove all cows from the holding pen and keep the gates in the pen closed. Permit further use of the pen only on a case by case basis (i.e. short-term holding for an injured cow).

Lower Bunchgrass Pasture - Expand the pasture east to the existing drift fence along the East Branch LeClerc Creek Road (FR 1934). Prevent cattle drift around the eastern end of this drift fence by extending the fence north to tie in with dense vegetation / steep topography in T. 36N, R. 44E, Section 14, SE ¼.

With this adjustment in the pasture / allotment boundary, a portion of the lower Middle Branch LeClerc Creek would lie within the allotment, as is presently the case. The west side of the creek is currently fenced on NFS land in T. 36N, R. 44E, Sections 16 and 20. Tie this fencing in with new fencing on the east side of the creek, thereby creating two separate riparian exclosures that would prevent cattle from accessing the creek in these two sections.

Construct new fencing in the southwest corner of this pasture to connect existing fence segments into one continuous barrier to livestock movement off the allotment. Use new fencing to exclude livestock access to the willow shrub wetland below the new cement bridge on FR 1935 (T. 36N, R. 44E, Section 29, S ½ of the NE ¼).

There would be no need for the fencing proposed with Alternative C along the northwest corner of Section 21 (T. 36N, R. 44E), since with Alternative D, this section would be included within the allotment. For the same reason, there would be no need for the 2 cattle guards proposed with Alternative C on FR 1935 in this section.

Mineral Creek Pasture - Expand the northern allotment boundary to include an area along the Paupac Road (FR 1936) where there is upland forage on the road shoulders. Install 2 cattle guards and any necessary wing fencing to confine livestock to the road corridor in this area. One cattle guard would be placed on FR 1936, and one on FR 1936010; a gated spur road.

Dry Canyon Pasture - Construct a short drift fence across FR 1933141 to reduce cattle drift out of this pasture.

2. Grazing Schedule - As with Alternative C, push back the turn-on date for the allotment from June 1 (existing condition) to June 15. The following table displays the approximate timing of grazing, and the changes to the pasture acreages from the existing condition, with Alternative D.

Table 4: LeClerc Creek Range Allotment - Alternative D grazing schedule and pasture data

Pasture	Approximate season of use	Days of use	Approx. acres	Acreage change from existing
Hanlon Meadow	June 15 - utilization met	varies	13	+13
Lower Bunchgrass	up to July 21	37	7,401	+1,780
Mineral Creek	July 22 – Sept. 30	71	7,023	+1,420
Upper Bunchgrass			5,411	- 1,281
Dry Canyon	October 1 – 15	15	6,018	+ 2,981
Fourth of July	pasture dropped with this alternative			- 2,460
Total	June 15 – Oct. 15	123	25,866	+2,453

IV. WILDLIFE CONSERVATION MEASURES AND MITIGATION

A. Allotment Management Criteria

The design elements displayed in the following table would be incorporated into the allotment management plan (AMP) for the allotment. These practices are based on the Interagency Grizzly Bear Guidelines (USDI et al. 1986) and would be intended to avoid or minimize potential negative effects from livestock grazing to grizzly bears and their essential habitats. These management elements would provide similar protections to other TES wildlife species.

Table 5: LeClerc Creek Grazing Allotment - management design criteria for grizzly bears

Design element	Allotment management plan (AMP) design criteria
timing of grazing	With Alternatives C and D, push back the turn-on date for the allotment to June 15. Grizzlies would then have an extra two weeks of spring foraging opportunity free from competition and disturbance from domestic stock.
range condition	The AMP would specify that the range condition class be good to excellent in order to achieve forage conditions favorable to grizzlies.
livestock carcasses	The AMP would specify measures for the timely removal, destruction, or treatment of livestock carcasses to avoid positive conditioning of grizzly bears to livestock carrion as food (see the following section on required mitigation).
food storage	The AMP would require that human food, prepared livestock and pet food, and refuse associated with livestock operations be made unavailable to grizzlies through proper storage (normally in a hard-sided vehicle). A copy of the Forest's food storage order would be included in the AMP. Brochures on living and working in grizzly bear occupied habitat would be included in the AMP.
closed road access	Each year the allotment is active, the district wildlife biologist would issue the permittee a written permit and gate key for motorized access on closed roads in the allotment. The AMP would require the permittee to limit his motorized entries to only those necessary for managing the allotment (i.e. salting, maintaining fences, moving stock, etc.). The AMP would require the permittee to track his motorized entries on closed roads in the allotment, and return the completed permit and key to the biologist within one month of the end of the grazing season.
compliance	The AMP would specify that the permittees' full cooperation in meeting grizzly bear management goals and objectives would be a condition to his receiving and holding his permit. The AMP would include a clause for providing for cancellation or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation.

B. Required Mitigation

The Forest Service (FS) is responsible for managing allotments to ensure compliance with Forest Service Policy and Forest Plan Standards, including those that concern the Federal Endangered Species Act and management of Forest Service Sensitive Species, Management Indicator Species and other species of concern. Maintaining wild, large predators on the landscape involves reducing the likelihood that they prey on livestock. The following mitigation measures would be necessary under certain conditions to reduce potential impacts of the allotment management alternatives to large carnivores.

1. Sick or injured livestock - If the permittee discovers a sick or injured cow, he would remove the animal from the allotment as soon as possible, so that it is not targeted by large carnivores.

2. Livestock carcasses - The objective would be to reduce the opportunity for large predators to scavenge livestock carcasses in order to reduce the potential that the predators would associate domestic stock with food.

If a livestock carcass is discovered on the allotment, the permittee would, as soon as possible, contact the Washington Department of Fish and Wildlife (WDFW) and provide them with known details of the mortality and its location. The permittee would also provide information on livestock losses and depredation to their Forest Service range specialist. The permittee and WDFW would agree to a method to minimize the opportunity for large predators to scavenge the carcass unless otherwise directed by a regulatory agency. The carcass could be dealt with in one or more of the following ways, or by other accepted methods:

- complete removal,
- destruction,
- burial (which if on NFS land would require clearance by the forest archaeologist),
- covering with a dark tarp,
- treatment with lime,
- installing fladry (a line with attached flagging) around the carcass, and
- installing electrified (turbo) fladry around the carcass.

3. Livestock depredation - The intent would be for the permittee to quickly report any suspected depredations and coordinate with WDFW to determine a course of action to prevent or minimize further depredation.

In the event of a suspected depredation by a large predator, the permittee would, as soon as possible, contact the Washington Department of Fish and Wildlife (WDFW), provide them with known details of the incident and its location, and discuss and take steps to improve the ability of investigators to determine the cause of depredation. If the depredation includes livestock mortality, the permittee would deal with the carcass using an agreed upon method listed above. Steps to improve the ability of investigators to determine the cause of depredation could include but are not limited to the following:

- avoiding walking in and around the area,
- keeping dogs away from the area to protect evidence,
- placing a tarp over the carcass,
- using cans or other objects to cover tracks and scat, and
- taking photos of the carcass, tracks, scat and other predator sign.

C. Recommendation

In addition to the above required mitigation, we encourage the permittee to engage in discussions with the WDFW and the Forest Service to coordinate the exchange of information, and to develop proactive strategies for minimizing the potential for large carnivore / livestock interactions and conflicts. We encourage the permittee and his employees to report any observations of grizzly bears or other TES wildlife or sign to the Forest Service.

D. Habitat Improvement Projects

The following habitat improvement projects could be completed in the allotment using grants, cost-share monies, volunteer labor, etc.

1. Protect / Maintain Aspen - Cut down small (non-commercial) conifers within selected aspen stands to forestall the aspen trees from being shaded out over time. Fence selected aspen stands to limit livestock browsing of young sprouts.

2. Maintain Meadows - Periodically cut down small (non-commercial) conifers where they are encroaching into Fourth of July and other meadows, in order to keep these sites in an open, productive condition for big game and other wildlife. Use prescribed fire to remove encroaching conifers and grass thatch, and rejuvenate grasses, in meadows.



Figure 4. This livestock exclosure is allowing aspen regeneration to release.

V. PREFIELD REVIEW AND FIELD SURVEY

We compiled state and CNF records of past observations of wildlife species or their sign within the allotment. We reviewed past environmental documents specific to the allotment and forest management projects in the area. Over the course of several days in the summer of 2000, we reviewed wetlands in the allotment with Lisa Hallock, Herpetologist with the Washington Department of Natural Resources (Hallock 2003). In the summer of 2009 and 2010, we surveyed timber stands in the allotment for wildlife habitats in conjunction with the planning effort for the Hanlon Vegetation Management Projects. Over several days in the summer of 2012 and 2013, we assessed the impacts of cattle grazing on selected riparian and upland meadow habitats. The interdisciplinary team assigned to this project discussed specific aspects of present management of the allotment during several field trips in the summer of 2012.

VI. THREATENED, ENDANGERED, AND SENSITIVE (TES) SPECIES

The LeClerc Creek Range Allotment is entirely included within the boundary of Pend Oreille County, Washington. For this county, the USDI Fish and Wildlife Service (FWS) presently lists five species as threatened or endangered under the Endangered Species Act of 1973 (http://www.fws.gov/wafwo/species_new.html). At this time there is one candidate species for listing.

The USDA Forest Service maintains a list of sensitive species for each national forest. Sensitive species are those whose population viability is a concern because of:

- Significant current or predicted downward trends in numbers of animals, or
- Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

TES fish and plant species are covered in separate reports for this project. The following tables display information for TES wildlife species relative to the LeClerc Creek Range Allotment. This report will address the predicted effects of the project to those terrestrial wildlife species with potential habitat in the project area (shaded blocks).

Table 6: LeClerc Creek Range Allotment - habitats for threatened (T), endangered (E), and candidate (C) species listed for the CNF (species in shaded blocks are addressed in this report).

Species	Status	Habitat present?	Documented in area?	Habitat description / other comments
bull trout (<i>Salvelinus confluentus</i>)	T	Yes	Yes	This species is addressed in the fish biologist's report for this project.
Canada lynx (<i>Lynx canadensis</i>)	T	Yes	Yes	A portion of the allotment is located on lynx primary range. Lynx occupy higher elevation forests. Foraging habitat is in extremely dense young stands of lodgepole pine, other conifers, or mixed conifer / hardwoods (snowshoe hare habitat). Lynx den in stands having late and old structure with jackpots of down logs (also habitat for red squirrels, an important alternate prey species). Other considerations include habitat connectivity and seclusion from human disturbance (Ruediger et al. 2000).
grizzly bear (<i>Ursus arctos</i>)	T	Yes	Yes	The entire allotment is located within the Selkirk Mountains Grizzly Bear Recovery Area. Spring forage habitats for bears include low to mid-elevation riparian areas, meadows, parklands, etc. Summer / fall foraging sites include mid - high elevation, berry producing shrub fields. Grizzlies often den in alpine / subalpine areas with deep soils and where snow tends to linger into the spring. Seclusion from human disturbance is a primary management objective (USDI et al. 1986 and USDI 1993).
woodland caribou (<i>Rangifer tarandus caribou</i>)	E	Yes	Yes	The higher elevations of the allotment (above 4,000 feet) are within the Selkirk Mountains Woodland Caribou Recovery Area. Suitable caribou habitat consists of late and old structural stage stands in the cedar / hemlock and subalpine fir / spruce habitat series (USDI 1994 and USDA 1988). Forage during the warm months includes grasses, sedges, forbs, mushrooms, and the leaves of shrubs such as pachistima, prince's pine, huckleberries, and others. Winter diet is mainly confined to arboreal (tree) lichens.
whitebark pine (<i>P. albicaulus</i>)	C	No	Yes	This species is addressed in the botanist's report for the project.
yellow-billed cuckoo (<i>Coccyzus americanus</i>)	T	No	No	The normal range of yellow-billed cuckoo does not include Washington. A single bird was sighted on the Little Pend Oreille NWR in 2012. Two years of follow-up surveys failed to find the bird, which is considered a vagrant. This species requires river floodplains that support dense willow and cottonwood stands (WDFW 1991). This habitat does not occur in the project area but could potentially be found along the Pend Oreille River, about two miles west of the allotment.

Table 7: LeClerc Creek Range Allotment - habitats for sensitive terrestrial vertebrates listed for the CNF (Species in shaded blocks are addressed in this report.)

Sensitive vertebrates	Habitat present?	Documented in the area?	Habitat description / other comments
American peregrine falcon (<i>Falco peregrinus</i>)	No	No	This species requires tall cliff faces for nesting (Hayes and Buchanan 2001). Suitable habitat does not exist on the allotment. Good quality potential foraging habitats are located one mile west of the allotment on the Pend Oreille River and adjacent private lands.
bald eagle (<i>Haliaeetus leucocephalus</i>)	Yes	Yes	Eagles forage on rivers and large lakes with abundant fish. For nesting / perching, they select large trees that stand above the main forest canopy, and usually within one mile of a foraging area. Winter roosts may be in old growth stands with good canopy closure (Stalmaster 1987).
common loon (<i>Gavia immer</i>)	No	No	This species requires large lakes or rivers with abundant fish and adequate shoreline vegetation to conceal a nest (Richardson et al. 2000). Suitable habitat does not occur within the allotment.
gray wolf (<i>Canis lupus</i>)	Yes	Yes	The territory of the Diamond Wolf Pack overlaps the allotment. Wolves are closely tied to habitats that support abundant big game populations. Limiting livestock depredations and human-caused wolf mortality are primary management concerns (Mech 1991).
great gray owl (<i>Strix nebulosa</i>)	Yes	Yes	This owl forages in open, grassy habitats such as open forest stands, meadows, pastures, and wetlands. They nest in forest stands near foraging areas. Nest structures include large, broken-topped snags and abandoned raptor nests (Hayward and Verner 1994).
harlequin duck (<i>Histrionicus histrionicus</i>)	Yes	Yes	Harlequins breed on cold, fast-moving mountain streams with adjacent dense shrub / timber stands and an absence of human disturbance. They winter on boulder strewn, coastal waters (Lewis and Krage 2003).
Lewis' woodpecker (<i>Melanerpes lewis</i>)	Yes	No	This woodpecker is principally associated with open or park-like ponderosa pine stands and cottonwood riparian areas. They may also nest in stands of mixed conifers, riparian woodlands, and burned-over stands of Douglas fir (WDFW 1991).
moose (<i>Alces americanus</i>)	Yes	Yes	In the summer, moose feed on submergent and emergent aquatic plants in areas of slow moving water, ponds and wetlands. They forage on shrubs year-round including willows, dogwoods, maples, evergreen ceanothus and serviceberry. Forest clearings, including burned or logged areas, in 15-30 year old successional stages are heavily used (WDFW 1991).
mountain goat (<i>Oreamnos americanus</i>)	Yes	Yes	Winter range is on steep, rocky sites close to diverse forage and cover. Exposed aspects with low snow accumulations are preferred. Summer ranges are larger and usually not a limiting factor. Escape terrain (rock-cliff habitats) is critical to avoid predators (WDFW 1991).
pygmy shrew (<i>Sorex hoyi</i>)	Yes	No	Found in conifer stands and wetlands with dense ground vegetation. May be associated with disturbed, seral habitats. In WA, pygmy shrews have been captured in upland, even-aged second-growth conifer forests (WDFW 1991).
red-tailed chipmunk (<i>Tamias ruficaudus</i>)	Yes	No	On the CNF, this species is most prevalent at higher elevations in the moist, subalpine fir / Engelmann spruce plant associations where stand understories are dense (Best 1993).
sandhill crane (<i>Grus canadensis</i>)	No	No	This species requires isolated, large tracts of marshes or wet meadows that are more than ¼ mile from open roads (Littlefield and Ivey 2001). Suitable habitat does not occur within the allotment.

Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	No	No	This bat uses caves or mines for roosting or hibernation. Abandoned buildings are sometimes used by nursery colonies (WDFW 1991). No usable structures occur within the allotment.
white-headed woodpecker (<i>Picoides albolarvatus</i>)	Yes	No	Primarily birds of mature, ponderosa pine forests, this species forages on large, decayed snags and ponderosa pine trees greater than 24" in size (WDFW 1991).
North American wolverine (<i>Gulo gulo luteus</i>)	Yes	Yes	Wolverines typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque basins. They forage in all higher elevation habitats but particularly those where carrion can be found. They require seclusion from human disturbance (Copeland 1996).

Table 8: LeClerc Creek Range Allotment - habitats for sensitive invertebrates listed for the CNF (Species in shaded blocks are addressed in this report)

Sensitive butterflies	Habitat present?	Documented in area?	Habitat description / other comments (James and Nunalee 2011)
eastern tailed blue (<i>Cupido comyntas</i>)	Yes	No	This species thrives in disturbed environments. It uses a variety of lightly wooded, dry habitats and weedy areas. It is found in vacant lots, parks, canals and creeks and fallow fields. Caterpillars feed on both native and exotic plants in the pea family.
Great Basin fritillary (<i>Speyeria egleis</i>)	Yes	No	Associated with openings and edges in forest habitats including; montane meadows, forest clearings, exposed rocky ridges, and stream banks. Forested habitats themselves are not used.
meadow fritillary (<i>Boloria bellona</i>)	Yes	No	Colonies are very local and endemic in the Pacific NW. Preferred habitat is open, boggy, wet meadows. Also found in aspen parklands and pine woodlands between 2000 and 5000 feet in elevation. Caterpillars feed on violets.
Peck's skipper (<i>Polites peckius</i>)	Yes	No	Habitats include mountain meadows, marshy edges of potholes and roadsides. Wet, grassy meadows are preferred.
Tawny-edged skipper (<i>Polites themistocles</i>)	Yes	No	Habitat includes a variety of moist, grassy habitats at higher elevations such as lake and pond margins, wetlands and stream margins. Host plants include a variety of grasses and sedges.
Rosner's hairstreak (<i>Callophrys nelsoni rosneri</i>)	Yes	No	Habitat for this species includes openings and edges in coniferous forest around western redcedar. Adults lay their eggs on cedar needles. Larvae utilize cedar foliage.
Sensitive dragonflies and damselflies	Habitat present?	Documented in area?	Habitat description / other comments (Foltz Jordan 2008, Paulson 1999)
subarctic bluet (<i>Coenagrion interrogatum</i>)	No	Yes	Populations of these species are localized and rare in the Pacific Northwest. In Washington, they are associated with high-elevation ponds, bogs, fens, and boreal wetlands. On the CNF, they have been documented at Bunchgrass, Rufus, Granite, Davis and Little Davis meadows. Subarctic bluet has also been found at Frater Lake; a mid-elevation lake / wetland complex that is influenced by cold air drainage (Loggers and Moore 2011).
subarctic darner (<i>Aeshna subarctica</i>)	No	Yes	
zigzag darner (<i>A. sitchensis</i>)	No	Yes	
delicate emerald (<i>Somatochlora franklini</i>)	No	Yes	In WA, both species have been found only at Bunchgrass Meadows, a Research Natural Area on the CNF (Loggers and Moore 2011). Bunchgrass Meadows is an extensive, high elevation, sedge wetland.
whitehouse emerald (<i>S. whitehousei</i>)	No	Yes	It is similar to boreal bogs located much further north in Canada and is thought to be a remnant of the last ice age.

Sensitive mollusks	Habitat present?	Documented in area?	Habitat description / other comments
fir pinwheel (<i>Radiodiscus abietum</i>)	Yes	No	Most often found in moist and rocky Douglas fir forest at mid-elevations in valleys and ravines and sometimes in western redcedar. It is often found in or near talus or under fallen logs (Duncan 2008).
magnum mantleslug (<i>Magnipelta mycophaga</i>)	Yes	No	This species prefers very moist habitats with permanent or persistent water sources. It is often associated with rock talus, deep leaf and needle duff, and large woody debris. In Washington it is found in subalpine fir plant associations (Frest and Johannes 1995).

VII. EFFECTS OF THE GRAZING ALTERNATIVES TO TES SPECIES

The methods I used to analyze the effects of proposed allotment management alternatives to threatened, endangered and sensitive wildlife species habitat and populations included:

- review of data collected during field reconnaissance,
- review of timber stand examination data,
- aerial photo interpretation,
- spatial habitat analysis using a geographic information system (GIS).

I conducted a risk assessment of the potential effects to each threatened and endangered species according to procedures outlined in Forest Service Manual (FSM) 2672.42, 8 / 90, R-6 Supp. 2600-90-5 (see Appendix A).

A. Canada lynx (threatened)

1. Management Framework - Lynx were listed by the USDI Fish and Wildlife Service as a threatened species in March of 2000. An interagency team completed the Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) several months later. That document incorporated the latest research findings on lynx, and recommended objectives, standards, and guidelines for all projects on public lands within the range of lynx.

A task identified in the Canada Lynx Conservation Assessment and Strategy (LCAS) was for biologists to map lynx range on their respective land management unit (national forest, national park, etc.) within the overall range of the species. This area should then be divided into separate Lynx Analysis Units (LAUs) between 25-50 square miles in size; the average home range of an individual lynx. The LAU is the unit over which biologists evaluate and monitor habitat over time. Areas outside of LAUs are not considered important for supporting reproducing lynx (LCAS pages 7-2 to 7-4). In the summer of 2000, biologists with the CNF mapped lynx range across the Forest. East of the Pend Oreille River, we included all lands lying roughly above the 3,500 foot contour in the lynx range. We mapped individual LAUs on watershed boundaries to the extent possible.

In the summer of 2013, the Interagency Lynx Biology Team published an updated version of the LCAS. This document identified the Selkirk Mountain Range as a “secondary area” for lynx where “The focus of management is on providing a mosaic of forest structure to support snowshoe hare prey resources for individual lynx that infrequently may move through or reside temporarily in the area.” However, given the regular sightings of lynx on the Forest, the recommendation of the USDI

Fish and Wildlife Service is to manage lynx habitat in the Selkirk Mountains as a “core area” for lynx (personal comm. with M. Eames and B. Holt 2014).

Project planning standards in the LCAS related to livestock grazing on lynx range include:

- manage grazing within riparian areas and willow carrs to maintain conditions that support snowshoe hares by maintaining a preponderance of mid or late-seral stages.

2. Existing Conditions - The LeClerc Creek Grazing Allotment contains portions of the Molybdenite, LeClerc, and Harvey LAUs. Biologists with the Washington Department of Fish and Wildlife documented lynx tracks in the Harvey LAU during snow track surveys they completed in 1998 and 2004 (Base and Zender 2008). A set of possible tracks was reported from the Paupac LAU in 2008. No lynx observations or sign are on record from the LeClerc LAU.

In northeastern Washington, lynx use lodgepole pine, subalpine fir, Engelmann spruce, and aspen cover types in subalpine fir plant associations (Ruediger et al. 2000). They may also use other mesic stands (particularly cedar / hemlock cover types) that lie in proximity to the preferred cover types (personal comm. with B. Holt 2012). Lodgepole pine and subalpine fir / spruce stands exist in the higher elevation portions of the allotment. Cedar / hemlock stands are common in the allotment, particularly on sheltered aspects and in draw bottoms.

Foraging Habitat - Snowshoe hares are the primary prey of lynx. Hares prefer forested habitats that have ample cover and browse low to the ground. Dense young stands of trees (at least 15 years old) that are at least 75 percent lodgepole pine and / or hardwoods are prime habitats for hares. These stands tend to be productive lynx foraging sites. Within the lynx primary range on the allotment, the denser and older plantations appear to be providing suitable foraging habitat for lynx. Livestock are effectively excluded from these sites owing to their extremely dense nature.

On the LeClerc Creek Range Allotment, livestock can sometimes mechanically damage conifer trees in young plantations (up to 5 years old). This typically occurs where the topography is flat, and the plantation is located adjacent to a cattle travel way or meadow. In the worst such cases this can affect the number of planted trees that survive the first five years. However, with the in-growth of volunteer trees, cattle use of plantations on the lynx range is not impairing the development of lynx forage habitat over time (pers. comm. with P. Haas 2013).

In the summer, snowshoe hares consume green forage, the leaves of shrubs, and woody browse. Their wintertime diet is restricted to small diameter twigs and bark (Ruediger et al. 2000). “In riparian areas within lynx habitat, ungulate forage use levels may reduce forage resources available to snowshoe hares. Browsing or grazing can have direct effects on snowshoe hare habitat if it alters the structure or composition of native plant communities” (Ruediger et al. 2000). In that portion of the allotment located on lynx range, streamside riparian vegetation is being utilized by livestock on low gradient stream reaches at lower elevations. Stream headwaters are typically on steeper, incised slopes that are densely vegetated. Livestock access to these sites is poor and they exhibit little to no sign of cattle use.

Aspen trees are uncommon to rare on the lynx range in the allotment, and mainly occur as trace components of conifer stands. Aspen regeneration on lynx range may be suppressed by livestock where these trees are growing within or adjacent to key grazing areas.

During times of hare scarcity, lynx focus more on alternate prey such as red squirrels, grouse, and infrequently, ungulates (Ruggiero et al. 1999). At the southern extent of lynx range (including the CNF) the main alternate prey appears to be red squirrels. Mature forests with good canopy closure, large amounts of coarse wood on the ground, and good cone production, tend to support larger populations of red squirrels. Livestock tend to find these stands difficult to move through and lacking in available forage.

Den Habitat - Lynx tend to locate their natal dens in forest stands with large amounts of woody debris such as log “jackpots” or rootwads. Dens may be in older regenerating stands or mature forests, typically of spruce / fir or spruce / birch (Ruediger et al. 2000). Potential lynx den stands in the allotment exist at higher elevations. They typically have closed canopies and limited forage values for livestock. There are no known lynx den sites within the allotment or surrounding lands.

3. Effects of the Grazing Alternatives - The following table displays the LAU acreage in the allotment by project alternative.

Table 9: LeClerc Creek Range Allotment - lynx primary range data by alternative

Lynx Analysis Units (LAU) by allotment pasture	Approximate acres in lynx range			
	Alternative A (no change)	Alternative B (no grazing)	Alternative C	Alternative D
LeClerc LAU	1,945	0	1,299	1,682
Fourth of July	628	0	0	0
Lower Bunchgrass	1,170	0	1,170	1,553
Upper Bunchgrass	147	0	129	129
Paupac LAU	10,986	0	9,125	11,012
Dry Canyon	99	0	531	531
Lower Bunchgrass	36	0	36	36
Mineral Creek	4,593	0	3,528	5,415
Upper Bunchgrass	6,258	0	5,030	5,030
Harvey LAU	43	0	0	0
Mineral Creek	8	0	0	0
Upper Bunchgrass	35	0	0	0
Total allotment acres in lynx range	12,974	0	10,424	12,694

Effects to Foraging Habitats

Alternative A (no change) - Dense plantations and other young, overstocked forest stands would continue to be effectively impenetrable to livestock on the lynx range. Impacts to these snowshoe hare (primary prey) habitats would be insignificant or discountable. Livestock grazing would have no impact on mature conifer trees and cone production; essential resources for tree squirrels (alternate prey). Livestock would continue to reduce the biomass and vigor of green forage plants

and riparian shrubs on certain stream reaches, as well as aspen reproduction. These effects to snowshoe hare forage plants would be of relatively small scale, and mostly occur on gentle topography within the vicinity of key grazable areas such as old homestead meadows.

Alternative B (no grazing) - Livestock utilization of riparian vegetation and aspen reproduction on the lynx range would cease. Low cover for snowshoe hares should quickly improve in density on locally impacted sites. Browse and green forage values could be enhanced on these sites.

Alternatives C and D- As with Alternative A, livestock grazing would continue to have insignificant or discountable effects to dense, young conifer stands that provide quality habitat for snowshoe hares. Livestock grazing would have no effect to habitat components important to red squirrels such as mature conifer trees, conifer cone production, and overhead forest canopy.

The entire Fourth of July Pasture and higher elevation areas south of Molybdenite Ridge would be removed from the allotment with these alternatives. The bulk of these areas are on the lynx primary range. Any trails that livestock could use to drift into these areas (and off the allotment) would be effectively blocked with sections of fence, jackpots of felled trees, or other means. Local impacts from livestock grazing to lynx prey habitats should cease in those areas removed from the allotment.

Approximately 432 acres of lynx range would be added to the Dry Canyon Pasture with these alternatives, in order to make this pasture contiguous with the rest of the allotment. With Alternative D, the Mineral Creek Pasture would be expanded by approximately 822 acres in the southwest corner of the Paupac LAU. Livestock access to most of the acres added to the allotment would likely be precluded by natural barriers such as steep, broken ground, or dense forest stands. Moreover, the total area of lynx range on the allotment would be reduced by approximately 2,550 acres with Alternative C and 280 acres with Alternative D, from the present condition.

New cattle guards and allotment / pasture fencing would be installed in strategic locations in order to block animals from drifting between pastures or off the allotment. Cattle distribution in the Lower Bunchgrass Pasture would be improved with the installation of water troughs in upland areas. These new watering sites should enable cows to more efficiently utilize upland forage resources, potentially reducing the amount of time they spend in lowlands and riparian habitats. Any trails that stock could use to drift into high-elevation areas (and off the allotment) would be effectively blocked with sections of fence, jackpots of felled trees, or other means.

Adaptive Management - With Alternatives C and D, key riparian areas would be monitored for green forage and riparian shrub utilization by livestock. If the habitat parameters provided in the monitoring and adaptive management plan (Appendix D) are not being met, the Forest Service would take steps to reduce grazing impacts to these resources. These could include reducing livestock numbers, reducing the length of the grazing season, protecting specific areas with fencing, etc. The intent would be to initiate and sustain an upward trend in riparian habitat conditions, which should benefit snowshoe hares utilizing these habitats.

Effects to Den Habitat

Alternative A (no change) - Livestock would normally have access to the lynx range in the allotment well after the initiation of lynx denning. Cattle movement within potential den stands

would normally be restricted by dense understory vegetation and coarse woody debris. Thus, the risk of cattle disturbing adults or kittens during this critical life stage would continue to be slight or questionable.

Alternative B (no grazing) - There would be no potential for livestock to disturb lynx den activities.

Alternative C - Cattle movement within potential lynx den stands would continue to be hindered by dense understory vegetation and woody debris. The turn-on date for the allotment would be pushed back from June 1 to June 15, postponing livestock access to the higher elevations. Areas above about 5,000 feet south of Molybdenite Ridge would be removed from the allotment. Thus, cattle use of potential lynx den stands would be reduced in both time and space from the existing condition. The risk of cattle disturbing lynx denning activities should be reduced from the present condition.

Alternative D - Effects to potential lynx den habitat would be the same as for Alternative C with one exception; the Mineral Creek Pasture would be expanded by approximately 822 acres in the southwest corner of the Paupac LAU. Several late and old structural stage stands exist in this area that could provide denning opportunities for lynx. However, these stands are relatively dense and have scant forage resources for livestock.

Cumulative Effects - We must evaluate the cumulative effects of forest management practices within each lynx analysis unit (USDI 2001). The LeClerc Creek Range Allotment is the only livestock allotment within the Harvey, Paupac, and LeClerc LAUs. Appendix C lists the other forest management projects / uses presently underway or proposed in the LAUs which overlap the allotment.

In the last two decades, timber sales and road construction on Stimson Lumber Company lands opened up many dense stands and created new pathways for livestock to move through portions of the lynx range. Transitory range for cattle was created in a number of harvest units and on many of the roads, which were all closed to motorized vehicles with gates or earthen berms. Many of these grazable areas persist to this day. Over the same time frame, Whiteman Timber Sale was completed on NFS in the affected LAUs. Harvest units associated with this sale have mostly regenerated to the point where they are no longer providing transitory range for cattle. No new permanent road construction occurred on NFS lands on the lynx range with the Whiteman project.

It is possible that livestock access to some riparian areas and aspen stands was improved due to past timber harvest and road construction. However, streams were given no-cut buffers with all timber sales on all ownerships. In most cases, regenerating conifers and shrubs in timber harvest units reduced the permeability of these stands to livestock within roughly ten years. Dense plantations often became more effective barriers to cattle movement than the forest stands they replaced.

No Forest Service timber sales are presently active or planned in the affected LAUs. Stimson Lumber Company has several active or planned sales in the LeClerc LAU (see Appendix C). All of these sales would be located outside the LeClerc Creek Range Allotment. Stimson plans to employ no-cut buffers along streams with these projects (pers. comm. with W. Pierce 2013).

There are a number of on-going or planned habitat improvement projects in the LAUs such as culvert replacements and large wood installation in streams. These projects could remove or damage some riparian vegetation that could otherwise be utilized by snowshoe hares. However, these impacts would be small scale, and the affected sites should quickly re-vegetate. These and other projects (ex. Middle Branch LeClerc Road Relocation Project), are intended to protect or restore riparian and aquatic habitats. Ongoing activities such as road easements, dispersed recreation, and forest survey / monitoring should have insignificant or discountable impacts to lynx and their prey.

Based on this discussion, we expect continued livestock grazing on the lynx range to have slight or questionable cumulative effects to riparian areas and aspen stands, when coupled with other forest management activities.

4. Effects Determination - With Alternative B (no grazing), any potential impacts of livestock grazing to the essential habitats of lynx prey animals would cease.

With Alternatives A, C, and D, livestock grazing would have insignificant or discountable effects to dense young conifer stands that provide the best quality snowshoe hare habitat, and to the essential habitat components of red squirrels. The potential for livestock grazing to disturb and displace lynx engaged in denning activities would be slight or questionable.

There would continue to be some potential for livestock to reduce green forage and low cover for hares within local streamside riparian areas. Aspen regeneration could be locally suppressed. With Alternatives C and D, the overlap in livestock and lynx use of the allotment would be reduced in both time and space from the existing condition. Monitoring and adaptive management proposed with Alternatives C and D should initiate improvements in shrub and hardwood density and green forage values in locally impacted riparian areas.

The alternatives as proposed would be consistent with recommendations in the LCAS for livestock grazing on lynx range. Based on this discussion, the effects determination for Alternative B would be “not likely to adversely affect - beneficial effect”. Alternatives A, C and D as proposed “may affect, but are not likely to adversely affect” lynx.

Risk Analysis

Alternative A (no change)

Consequence of adverse effects = moderate

Likelihood of adverse effects = low

Risk index value = $5 \times 1 = 5$

Alternative B (no grazing)

Consequence of adverse effects = low

Likelihood of adverse effects = none

Risk index value = $1 \times 0 = 0$

Alternatives C and D

Consequence of adverse effects = low

Likelihood of adverse effects = low

Risk index value = $1 \times 1 = 1$

B. grizzly bear (threatened)

1. Management Framework - The Interagency Grizzly Bear Guidelines (USDI et al. 1986), the Forest Plan (USDA 1988), the Grizzly Bear Recovery Plan (USDI 1993), and the Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones (USDA 2011), all provide direction for managing habitat for grizzly bears.

The Grizzly Bear Recovery Plan identifies six separate recovery areas in the western United States. In Washington State, the Selkirk Mountains Grizzly Bear Recovery Area lies east of the Pend Oreille River and north of the Middle Creek drainage. Each recovery area is divided into individual Grizzly Bear Management Units (BMUs) which biologists use for habitat evaluation and population monitoring. An individual BMU is roughly 100 square miles in size; the approximate area required for supporting an adult sow with cubs. The LeClerc Creek Range Allotment lies entirely within the LeClerc BMU.

Core habitat for grizzly bears is defined as areas lying further than 500 meters from open and restricted (gated) roads and motorized trails. Within this 500 meter “zone of influence”, grizzly bears are most prone to being disturbed and displaced from suitable habitat by encounters with vehicle traffic or people on foot. The risk of a bear being shot by a poacher, or mistakenly shot by a legal black bear hunter, is higher in these areas. The higher the road density is in a given area, the fewer acres of core habitat and the greater the risk of human-caused bear mortality (USDI 2001). Each individual BMU has its own set of standards for core habitat levels and road densities. For the LeClerc BMU, there should be no net decrease in core habitat or increase in open or total road densities due to Federal actions (USDI 2001).

Grizzly habitat maintenance and improvement, and grizzly-human conflict minimization are the highest management priorities for public lands within recovery areas. Livestock operations must be compatible with grizzly bear management objectives (USDI et al. 1986).

2. Existing Conditions - District records include more than two dozen potential and documented observations of grizzly bears or their sign in the allotment, dating back to 1976.

Livestock / grizzly bear conflicts - When livestock are grazed in grizzly bear-occupied habitat there is a potential for bears to locate and feed on livestock carrion. A bear that has fed on stock carrion could learn to associate domestic herds with food, and begin preying on livestock (USDI et al. 1986). This could cause the bear to be relocated or controlled by state or federal wildlife officers.

There have never been any depredations of cattle by grizzly bears documented on the Forest. The cattle grazed on the LeClerc Creek Range Allotment give birth off-Forest, and in the winter. Therefore, bears on the allotment do not have access to afterbirth or very young, highly vulnerable calves.

Cattle movement in the allotment is in part controlled by sections of barbed wire fencing running along pasture or allotment boundaries. Barbed wire fencing presents no barrier to grizzly bears. Typically a bear will squeeze between the gap between the first and second wire of a fence, or perhaps pass underneath the bottom wire (pers. comm. with J. Almack, M. Madel, D. Hanna 1999).

Seclusion - When they are actively foraging, grizzly bears often appear to ignore cattle and have been observed grazing right alongside domestic stock. Foraging stock can disturb and displace bears from their day beds however (pers. comm. with M. Madel 1999).

Each year the CNF issues a closed road-use permit to the allotment permittee for a number of restricted roads on the allotment (typically six roads). He uses this permit to move cattle from one pasture to another, place salt blocks, maintain fencing, and move his herd on or off the Forest. In any given year, he tallies a small number of entries (typically 0-5) on a given closed road.

Spring Forage - Grizzly bears emerge from the den in late March or April. At this time they are under-weight and physiologically stressed. Over the next few months it is critical that the animals consume large amounts of the most nutritious foods available in order to replenish fat reserves lost in hibernation. Palatable grasses, sedges, and herbs provide spring forage for grizzly bears. Deer fawns, elk calves, and the carcasses of winter-killed big game animals can be important sources of calories at this time of year. If bears do not have access to high quality forage in the spring, they may not be able to survive the next denning or post-denning periods. Sows entering the den in less than optimal shape may give birth to fewer cubs or none at all.

Within the range allotment, spring forage plants are most abundant within old homestead meadows, within the riparian corridors along major streams, and in discrete wetlands. Approximately 2,354 acres of the LeClerc Range Allotment are providing spring foraging habitats for grizzlies. This represents about 45 percent of the available spring forage habitat in the LeClerc BMU.

Presently, green forage in upland areas of the allotment tends to be under-utilized by cattle. Most utilization tends to occur on certain key meadows and riparian sites. In part this is due to poor existing controls over stock movement across the allotment. The key livestock grazing areas in the allotment are potentially among the most productive foraging sites for bears. However, the habitat value of most of these sites is compromised to a great extent by nearby open roads and the associated disturbance from vehicles and human presence. Bears are more likely to access relatively remote, forested wetlands than are cattle. Bears are also more likely to tolerate foraging in inundated wetlands.

In the late 1990s and early 2000s, the Forest Service, Kalispel Tribe, and volunteer groups partnered together to construct several livestock exclosures in the allotment. These fenced exclosures protect some key riparian areas, including a large (15+ acre) wet meadow / riparian shrub complex along Whiteman Creek in T. 37N, R. 44E, Section 32, SW ¼.

Noxious weeds exist in all of the grazable areas of the allotment. These exotic plants are usually not very palatable to wildlife, and can successfully out-compete native forage plants for sunlight, water, and soil nutrients. Certain weeds (ex. knapweeds) emit chemicals into the soil that suppress the growth of other plants. Weed seeds can be transported overland on the hair of livestock, and deposited in their feces. It is possible that cattle are bringing in weed seeds from off-Forest. They also may be spreading seeds from place to place within the allotment. The CNF has an active program of spraying herbicides to kill noxious weeds in meadows, on roadsides, and on other areas of the allotment. In recent years, these treatments have led to marked reductions in weed coverage and improvements in the vigor of native grasses and forbs in sites like Fourth of July Meadow.



Figure 5. Fourth of July Meadow provides spring forage habitat for bears (T.35N, R.44E, Section 4, SE ¼).

Late Summer / Fall Forage - As spring turns to summer, bears follow the “green-up” of forage plants to progressively higher elevations (USDI 1993). Bears will then seek out succulent forbs and other green forage plants growing in alpine meadows, avalanche chutes, and riparian areas. In the late summer and fall months, berry-producing shrub fields become important foraging sites as the fruit ripens. Discrete berry-producing shrubfields exist mainly at middle to upper elevations in the allotment; particularly within natural openings on the south side of Molybdenite Ridge. Berry-producing shrubs are often present in the understories of more open-canopied forest stands in the allotment. Huckleberries are the most common. Other species present include buffaloberry, thimbleberry, bearberry, serviceberry, mountain ash, and raspberry. Berry crops are not utilized by domestic livestock to an appreciable degree.

The following table displays the approximate existing acres of the various grizzly bear foraging habitats in the allotment.

Table 10: LeClerc Creek Range Allotment - existing condition of grizzly bear foraging habitats

Allotment pasture	Approximate acres				
	berry-producing shrubs	meadows, parklands	forb fields	riparian forest, shrub fields	wetlands
Dry Canyon	0	83	0	184	20
Fourth of July	275	0	30	51	58
Lower Bunchgrass	179	0	21	264	63
Mineral Creek	821	88	297	464	35
Upper Bunchgrass	1,367	146	109	347	94
Total acres (% of habitat in BMU)	2,642 (65)	317 (29)	457 (46)	1,310 (55)	270 (33)
LeClerc BMU	4,035	1,082	1,000	2,374	816

Den sites - Grizzlies tend to dig their dens on sheltered slopes where the wind and topography is likely to cause an accumulation of snow, and where the snow is unlikely to melt during warm periods (USDI 1993). Higher elevations, northerly aspects and remote areas that are isolated from human activity appear to be preferred by most bears. High elevation areas in the allotment are relatively isolated, but they tend to be on exposed, southerly aspects. The best den habitat in the LeClerc BMU is located on the north side of Molybdenite Ridge, just outside the allotment. A grizzly bear was documented to have excavated a den on the north side of this ridge in the 1990s.

Hiding Cover - Hiding cover for grizzly bears is defined as vegetation capable of hiding 90 percent of a standing adult bear from human view at a distance of 200 feet (USDI 2001). Owing to the densely forested nature of the allotment, hiding cover is abundant.

Cattle browsing on alder and other shrubs have reduced the density and vigor of these plants in certain riparian shrubfields in the allotment, particularly along the lower reaches of the Middle Branch LeClerc Creek. The reduced density of vegetation has resulted in increased line-of-sight distances through these prime bear foraging areas. Bears may be more vulnerable to disturbance or to being poached in areas lacking adequate hiding cover.

3. Effects of the Grazing Alternatives

Effects to Livestock / Grizzly Bear Conflicts

Alternative B (no grazing) - There would be no opportunity for grizzly bears to predate or scavenge domestic stock in the LeClerc BMU.

Alternatives A, C and D - The allotment management plan (AMP) for the allotment would require the permittee to remove any discovered sick or injured stock off the allotment, so they are not targeted by large carnivores. The AMP would also require the permittee to work with the Washington Department of Fish and Wildlife in completing the removal, destruction, or treatment

of any discovered livestock carcasses, if necessary. This could reduce the risk of grizzly bears becoming conditioned to viewing livestock as food.

With Alternatives C and D, the turn-on date for the allotment would be pushed back two weeks to mid-June. Although the turn-off date would likewise be pushed back to mid-October, grizzlies are most likely to be at higher elevations than where the cows would be in October. Thus, the potential for grizzly bear / livestock conflicts could be temporally reduced by two weeks with these alternatives.

Effects to Seclusion

All alternatives - There would be no change in core habitat levels or road densities in the LeClerc BMU resulting from any of the range allotment management alternatives.

Alternative A (no change) - There would be no change in the potential for a grizzly to be moved off a day bed by livestock, or disturbed by allotment management operations that are conducted on foot or horseback. There would be no change in the number of vehicle trips on closed roads required by the permittee, from the present condition.

Alternative B (no grazing) - There would be no risk of disturbance to grizzly bears in the LeClerc BMU associated with livestock operations. Closed road entries by the allotment permittee would cease.

Alternatives C and D - As previously mentioned, the turn-on date for the allotment would be pushed back by two weeks. Thus, the potential for livestock to disturb bears on their day beds during the critical spring period would be temporally reduced.

With the removal of the Fourth of July Pasture from the allotment, vehicle access by the permittee should not be required on closed Forest Roads 1932 and 1934200. There should be no change in the average number of vehicle trips required for allotment management on other closed roads, from the present condition.

Effects to Den Habitat

All alternatives - Cattle are off the Forest during the winter denning period. Livestock grazing on the allotment would not conflict with grizzly bear denning, or with the suitability of potential den sites for bears.

Effects to Forage Resources - The following table displays the acres of habitats that could provide foraging opportunities for bears, by alternative.

Table 11: LeClerc Creek Range Allotment - foraging habitats for grizzly bears included in the allotment by alternative

Grizzly bear foraging habitat	Approximate acres within the allotment			
	Alternative A (no change)	Alternative B (no grazing)	Alternative C	Alternative D
berry shrubs	2,642	0	975	984
Dry Canyon	0	0	0	0
Fourth of July	275	0	0	0
Lower Bunchgrass	179	0	155	155
Mineral Creek	821	0	234	243
Upper Bunchgrass	1,367	0	586	586
forb fields	457	0	390	393
Dry Canyon	0	0	0	0
Fourth of July	30	0	0	0
Lower Bunchgrass	21	0	12	15
Mineral Creek	297	0	298	298
Upper Bunchgrass	109	0	80	80
grasslands, parks	317	0	116	407
Dry Canyon	83	0	83	83
Lower Bunchgrass	0	0	0	4
Mineral Creek	88	0	3	290
Upper Bunchgrass	146	0	30	30
riparian forest	1,144	0	1,044	1,172
Dry Canyon	181	0	251	251
Fourth of July	48	0	0	0
Hanlon Meadow	0	0	0	4
Lower Bunchgrass	214	0	111	224
Mineral Creek	404	0	421	432
Upper Bunchgrass	297	0	261	261
riparian shrub fields	166	0	126	158
Dry Canyon	3	0	3	3
Fourth of July	3	0	0	0
Lower Bunchgrass	50	0	36	59
Mineral Creek	60	0	58	67
Upper Bunchgrass	50	0	29	29
wetland plants	270	0	177	227
Dry Canyon	20	0	49	49
Fourth of July	58	0	0	0
Hanlon Meadow	0	0	0	7
Lower Bunchgrass	63	0	38	76
Mineral Creek	35	0	40	45
Upper Bunchgrass	94	0	50	50

All alternatives - Cattle make only incidental use of native berries. Continued grazing should have insignificant or discountable effects to the availability of berry crops for bears.

Alternative A (no change) - Cattle distribution across the allotment would remain less than optimal, with animals tending to concentrate in lowlands and streamside riparian areas. Riparian vegetation would continue to be well-utilized along certain stream reaches. Grasses and forbs in many upland areas would continue to be under-utilized by cattle. Some cows would continue to drift between pastures, potentially re-grazing plants in preferred areas. Stock would also continue to drift off the allotment, due to the lack of adequate fencing and other control structures.

The risk of livestock transporting noxious weed seeds onto and across the LeClerc BMU would remain unchanged. The Forest Service would continue to monitor and control weed infestations across the BMU, as is standard practice.

Alternative B (no grazing) - Direct effects from cattle grazing, trampling, or trailing in local riparian habitats that currently occur on an annual basis would cease. Local stream segments and wet meadows that are being mechanically impacted by cattle trailing should recover over time. Riparian vegetation would become more dense and diverse on these sites. Over time the suitability of these sites as spring foraging habitat for grizzly bears could be enhanced.

The condition of homestead meadows would likely improve for the first few years. There would be fewer areas of bare ground on these sites. Native forage plants could increase overall while weedy “invader” species such as yarrow, plantain, and dandelion could decline. Over time there would be more accumulation of dead plant material that would insulate the ground, provide some water-holding capacity, and decrease the potential for surface soil movement and erosion.

Grasses evolved with the periodic removal of vegetative material through fire, insects, or grazing by ungulates. In the absence of livestock grazing, grasses growing in meadows would likely accumulate excess amounts of dead material over time. This accumulated litter may eventually shade out new shoots and cause the plants to go into a “self-imposed stress” (Knapp and Seastedt 1986). The vigor of the plants may be compromised and the meadows may become less productive and healthy.

In the absence of livestock grazing, young lodgepole pines and other conifers would accelerate their encroachment into existing meadows. This natural forest succession could lead to the conversion of these openings to forestland over time (pers. comm. with S. Zender 2005). We have documented this occurring within riparian livestock exclosures on the allotment. Lodgepole pines are successfully colonizing the upland areas within these exclosures, while apparently being suppressed in adjacent meadows that are still grazed by cattle. Mechanical damage or browsing of seedling trees by livestock may be keeping trees from establishing in the grazed meadows (pers. comm. with T. Catlin 2005). The fence line contrast is abrupt at these sites. Of the four alternatives, the need to actively manage meadows to keep them in an open, productive condition would be much greater with Alternative B (no grazing). The ability of the Forest Service to continue meadow maintenance treatments over time would be subject to available funding.

Cattle would no longer contribute to the spread of noxious weeds in the LeClerc BMU.

Alternative C - The annual turn-on date for the allotment would be pushed back from June 1 to June 15. Grizzly bears would be able to access green forage in the area for the entire spring period, free from competition with domestic stock. With changes to the allotment boundaries, the allotment would include approximately 501 fewer acres of habitats that could provide green forage for bears (grasslands, forb fields, riparian forest / shrublands, wetlands) within the allotment.

Cattle distribution across the Lower Bunchgrass Pasture would be improved with the installation of water troughs in upland areas. These new watering sites could enable cows to more efficiently utilize upland forage resources, potentially reducing the amount of time they spend in lowlands and riparian habitats. New cattle guards and allotment / pasture fencing would be installed in strategic locations in order to block animals from drifting between pastures or off the allotment. Any trails that stock could use to drift into high-elevation areas (and off the allotment) would be effectively blocked with sections of fence, jackpots of felled trees, or other means.

The Fourth of July Pasture would be removed from the allotment. Green forage plants that are consumed by bears would no longer be utilized by livestock in this pasture. Wetland plant diversity and production, and the hydrologic integrity of wetlands should be enhanced in the area, over time. In the absence of livestock grazing, there would be an increased need to periodically manage Fourth of July Meadow to keep it in an open, productive condition. Towards this end, the Forest Service could use prescribed fire to remove accumulations of rank grass leaves and encroaching conifer trees. Small conifers could also be mechanically removed. The ability of the Forest Service to implement these treatments over time would be subject to available funding.

With the boundary adjustment of the Lower Bunchgrass Pasture, approximately 2.6 miles of the Middle Branch LeClerc Creek would be fenced off and located outside the allotment. This segment of streamside riparian habitat is presently the most impacted by cattle on the allotment. If the proposed fencing is effective, riparian shrubs, succulent forbs, and sedges growing along the creek should increase in density and diversity over time. Forage values for grizzly bears should be enhanced.

The proposed shifts in boundaries of the Upper Bunchgrass and Mineral Pastures would result in only minor changes in how livestock use those pastures from the present condition. Cattle are already mostly excluded from the high-elevation areas that would be dropped from the allotment, due to steep topography and intervening dense, forest stands. We expect that areas added to the Dry Canyon Pasture would be mostly inaccessible to cows for the same reasons, as well as due to existing control structures (fencing, cattle guards). The intent of expanding the Dry Canyon Pasture would be to make it contiguous with the rest of the allotment. Thus, when the permittee drives his cattle on roads to the Dry Canyon Pasture, his herd would no longer have to pass *outside* of the allotment altogether.

Adaptive Management - The Forest Service would monitor key grazing areas (including riparian habitats) in the allotment to assess utilization and vegetation trends. If green forage utilization exceeds the standards proposed in the monitoring and adaptive management plan (Appendix D), the CNF would take management actions to reverse this trend. These could include additional pasture controls, shortening the grazing period in a given pasture, or reducing the numbers of cow / calf pairs authorized for the allotment.

The Forest Service would continue to monitor and control noxious weed populations on National Forest System lands in the BMU, as is standard practice. Alternative C would reduce the acres grazed by livestock in the BMU. Alternative C would incorporate new fencing and watering sites to promote better livestock control and distribution across the allotment. This should lead to fewer areas of soils exposed due to prolonged and concentrated livestock use. For these reasons, we anticipate that this alternative would reduce the risk of noxious weed spread in the BMU, over the long term.

Alternative D - This alternative would incorporate the design elements described for Alternative C, including the June 15 allotment turn-on date, removing the Fourth of July Pasture, new range improvements, and adaptive management based on monitoring. The main difference would be the expansion of the allotment boundary to the east, following the existing drift fence along the East Branch LeClerc Road (FR 1934). Most of the lower Middle Branch LeClerc Creek would be within the allotment, as is presently the case. Segments of this stream north of the holding pen in T. 36N, R.44E, Sections 16 and 20 would be completely included in new livestock enclosures (fenced). The stream segment running through Stimson Lumber Company's Section 21 would remain open to livestock use. This section of stream could see more concentrated stock use, since the upstream and downstream segments of the creek would be fenced off.

The new allotment boundary would include essentially the same amount of habitats that could provide green forage for bears, as the existing condition (Alternative A).

Effects to Hiding Cover

Alternative A (no change) - Cattle would continue to concentrate in lowlands and streamside riparian areas, particularly later in the year. Riparian shrub growth would continue to be suppressed on certain stream segments. The development of dense hiding cover along the most heavily browsed stream sections would continue to be suppressed.

Alternative B (no grazing) - Browsing of riparian shrubs and aspen by cattle would cease, leading to increases in regeneration and overall density of these hardwoods. This alternative has the greatest potential to improve hiding cover at locally impacted sites, over time.

Alternative C - New water troughs installed in upland areas of the Lower Bunchgrass Pasture should draw livestock away from lowland riparian areas to some extent, potentially leading to an upward trend in riparian shrub density. With the boundary adjustment of the Lower Bunchgrass Pasture, approximately 2.6 miles of the Middle Branch LeClerc Creek would be located outside the allotment. Hiding cover along this segment of streamside riparian habitat is presently the most impacted by cattle on the allotment. If the new allotment boundary fencing along the west side of the creek is effective, hiding cover values for grizzly bears should quickly improve on the excluded stream reaches. Within other areas dropped from the allotment (ex. Fourth of July Pasture), any impacts to hiding cover from livestock grazing should cease.

Alternative D - Effects would be the same as with Alternative C, with the exception that the segment of the Middle Branch of LeClerc Creek in T. 36N, R. 44E, Section 21 (owned by Stimson Lumber Company) would remain accessible to cattle. There could be more concentrated livestock use of this stream segment, leading to a reduction in riparian shrub density over time.

Cumulative Effects - We must evaluate the cumulative effects of forest management activities over individual bear management unit (USDI 2001). No other livestock are grazed in the LeClerc BMU besides those associated with the LeClerc Creek Range Allotment. Appendix C lists the other forest management projects / uses presently underway or proposed in the BMU.

In the last two decades, timber sales and road construction on Stimson Lumber Company lands opened up many dense stands and created new pathways for livestock to move through large portions of the LeClerc BMU. Transitory range for cattle was created in many harvest units and on new roadsides. Growing conditions for existing grizzly bear food plants such as grasses, forbs, and berry-producing shrubs was often improved. Many created openings persist to this day on Stimson lands. Over the same time frame there was one timber sale on NFS lands in the BMU; Whiteman Timber Sale. Harvest units associated with this sale have mostly regenerated to the point where they are no longer providing transitory range for cattle. No new permanent road construction occurred on NFS lands in the BMU. The Forest Service increased the effectiveness of many existing road closures by replacing gates with permanent closures such as earthen berms or boulders. All new roads on Stimson lands were closed to public use, usually with gates (pers. comm. with W. Pierce).

It is possible that livestock access to some riparian areas and aspen stands was improved due to past timber harvest and road construction. However, streams were given no-cut buffers with all timber sales on Stimson and NFS lands. In many cases, regenerating conifers and shrubs in timber harvest units reduced the permeability of these stands to livestock within roughly ten years. Dense plantations often became more effective barriers to cattle movement in the allotment than the forest stands they replaced.

Active or planned timber sales will create openings on almost 1,400 acres of forest stands in the BMU (see Appendix C). Any grasses and other green forage plants within these new openings will have improved access to sunlight, water, and soil nutrients. The plants should become more robust and palatable within one or two growing seasons. Additional forage for both livestock and wildlife could be provided on some of these sites for ten or more years following harvest. Improvements in forage production are likely to be best realized where prescribed burning is used to treat logging slash (mainly NFS lands). Livestock could spend more time foraging in openings created by logging, and less time in lowland riparian habitats. These effects would be additive to the improvements in livestock distribution we expect to occur with Alternative C, as described earlier. Riparian areas within timber sale units would receive no-cut buffers or selective harvest prescriptions, depending on the stream class and other site conditions.

In 2015 or 2016, the Forest Service will complete a prescribed burn in the Fourth of July Creek area to improve elk forage habitat. This project will increase forage palatability and vigor on more than 200 acres of shrublands, dry parklands, and grasslands. Spring forage production for grizzly bears should be enhanced where it exists on these sites; particularly in Fourth of July Meadow. Other proposed habitat improvements on the allotment such as meadow maintenance and aspen protection could also improve green forage resources.

Livestock grazing would contribute to the spread of noxious weeds in the BMU. These effects could be cumulative to those resulting from timber sales and other forest management projects that expose soils. The Forest Service would implement noxious weed prevention, pre-treatment and

monitoring actions with each active and proposed forest management project, as is standard procedure. Noxious weed management does not appear to be a consideration on state and private forest lands in the BMU. Weed infestations are likely to increase on those ownerships over time. The Forest Service would need to continue its ongoing program of weed monitoring and control, in order to check the spread of weeds in the BMU.

Timber sales and other vegetation management projects would remove or reduce hiding cover. These effects would be cumulative to those resulting from late-season browsing of riparian shrubs by cattle. However, both the Forest Service and Stimson Lumber Company routinely take steps to ensure that lateral cover is maintained where it exists within harvest units along open roads in the BMU. No point within created openings can be further than 600 feet from forested cover. Hiding cover is constantly being recruited in the BMU within older plantations. Alternatives C and D should initiate an improving trend in hiding cover associated with streamside riparian areas through the changes in allotment management described earlier.

Motorized entries on restricted (closed) roads required by the allotment permittee would be cumulative to those needed for forest management, research, monitoring, and emergency access. However, the number of entries associated with allotment management would continue to be small. It is our standard practice to limit the number of entries on each restricted road to no more than 57 trips during the “active bear year”. This is the disturbance threshold for classifying a road as “active” (open) for the purpose of calculating open and total road densities in each BMU over a given year. Most closed roads in the LeClerc BMU receive well under this number of trips in a given year (or no trips at all).

4. Effects Determination - With Alternative A, close administration of the allotment would be required to prevent cattle grazing from causing local impacts to riparian forage resources. Livestock and grizzly bears could be directly competing for the same forage resources for the last two weeks of the critical spring period for bears. The present low risk of livestock predation by grizzly bears would remain unchanged. This alternative “may affect, but is not likely to adversely affect,” grizzly bears.

With Alternative B, all effects from livestock grazing to spring forage habitats would cease. The need to periodically maintain meadows through burning, mechanical conifer removal, etc. would be greatest with this alternative. There would be no opportunities for grizzly bears to scavenge livestock carcasses, or predate stock animals. The effects determination for Alternative B would be “not likely to adversely affect - beneficial effect”.

With Alternatives C and D, the overlap in livestock and grizzly bear use of the allotment would be effectively reduced by two weeks. Livestock distribution should be improved from the present condition, potentially reducing grazing pressure on important lowland riparian habitats. Mitigation proposed with these alternatives would be intended to reduce the potential for bears to locate and feed on sick or injured livestock, or livestock carcasses. These alternatives “may affect, but would be not be likely to adversely affect,” grizzly bears.

Risk Analysis

Alternative A (no change)

Consequence of adverse effects = moderate

Likelihood of adverse effects = low

Risk index value = $5 \times 1 = 5$

Alternative B (no grazing)

Consequence of adverse effects = low

Likelihood of adverse effects = none

Risk index value = $1 \times 0 = 0$

Alternatives C and D

Consequence of adverse effects = low

Likelihood of adverse effects = low

Risk index value = $1 \times 1 = 1$

C. woodland caribou (endangered)

1. Management Framework - The Selkirk Mountains Woodland Caribou Recovery Area generally includes lands lying above 4,000 feet in elevation in northeastern Washington, northwestern Idaho, and southeastern British Columbia. On the Colville National Forest, the recovery area lies east of the Pend Oreille River from the Canadian border south to the Monumental Mountain area. The woodland caribou herd in the Selkirk Mountains Ecosystem is the only remaining population of this species in the lower 48 states.

In 2012, the USDI Fish and Wildlife Service designated a portion of the recovery area as critical habitat. Critical habitat is considered “essential to the conservation of the southern Selkirk Mountains population of woodland caribou” (USDI 2012). The mapped critical habitat area includes approximately 30,010 acres in extreme northeastern Washington and the northwestern Idaho.

The Selkirk Mountains Woodland Caribou Recovery Plan (USDI 1994), the forest plans for the Colville National Forest (USDA 1988) and the Idaho Panhandle National Forests (USDA 1990), and the amendments to the two forest plans (USDI 2001), all provide direction for caribou management. These documents do not specifically mention livestock grazing in caribou habitat. This is likely because the high montane forests that provide habitat for caribou are not usually thought of as productive rangeland for livestock. There is no direction for managing habitats for caribou outside of the recovery area, although animals that might occur there are protected.

2. Existing Condition - The Selkirk Mountains Woodland Caribou Recovery Area is divided into several Caribou Management Units (CMUs) which biologists use for habitat evaluation and monitoring. Approximately 8,244 acres of the LeClerc Creek Range Allotment is within the Molybdenite CMU. The allotment is located more than 12 miles south (outside) of designated critical habitat for the Selkirk Mountains caribou herd (USDI 2012).

In late winter, the Idaho Department of Fish and Game conducts aerial reconnaissance of the recovery area to census the remnant caribou herd. At that time of year, the animals tend to be using the more open, high-elevation ridges where it is possible to locate and count them from the air. In recent years, the caribou population has numbered less than 20 animals. The center of activity of the herd has been in the vicinity of Stagleap Provincial Park, located a few miles north of the international border in British Columbia.

Based on past telemetry and census locations, caribou have used habitats that are fairly well distributed across the CNF's portion of the recovery area. However, in the last ten years no animals have been documented south of the Salmo-Priest Wilderness, including the LeClerc Creek Range Allotment (personal comm. with W. Wakinen 2013).

Seasonal Habitat Components - The forest plans for the Colville National Forest (USDA 1988) and Idaho Panhandle National Forests (USDA 1990) described six seasonal habitats important to caribou and provided silvicultural prescriptions for maintaining / restoring these habitats in the recovery area. A more recent analysis by Kinley and Apps (2007) identified just five seasonal habitats used by caribou based on their distinct shifts in elevation over the course of the year. These seasonal habitats occur primarily within two vegetation zones; mature and older (100+ years) western hemlock / western red cedar and subalpine fir / Engelmann spruce forests. Seasonal habitats used by caribou are characterized in the following table.

Table 12: Woodland caribou seasonal habitat components (Allen 2013)

Seasonal zone	Approx. season of use	Stand description	Slope position
early winter	Nov. – Jan. 18	Mature and old spruce / subalpine fir with 26-50 percent canopy cover, old growth cedar / hemlock with 76-100 percent canopy cover with large, lichen-bearing branches.	mid-lower elevations
late winter	mid-Jan. – April 20	Mature and old stands of spruce / subalpine fir with 26-50 percent canopy and cover. High levels of arboreal lichens which caribou feed on almost exclusively this time of year.	upper slopes, ridgetops
spring	April 20 – July 7	Areas with abundant green forage which becomes the primary food source and allows caribou to recover from the effects of winter. These areas often overlap early and late winter ranges.	mid-lower elevations
calving	June 1 – July 7	Same as late winter.	high-elev. ridgetops
summer	July – Oct. 16	Mature and old subalpine fir / spruce stands with preference for benches, secondary stream bottoms and riparian areas, seeps, with abundant lush forage.	higher elevations

Winter Forage - In the winter, caribou utilize forage resources such as tree lichens that are not eaten by cattle to an appreciable degree. On the LeClerc Creek Range Allotment, livestock appear to have poor access to the high-elevation ridge systems that provide late winter habitat for caribou, owing to intervening steep topography and dense stands of trees. Suitable early winter stands for caribou are also difficult for cattle to access, due to the heavy tree stocking and coarse woody debris on the forest floor. Cattle are off the Forest during the wintering period for caribou.

Spring / Summer Forage - Livestock make only incidental use of pachistima, huckleberries, and other shrub species important to caribou during the warm months. The primary potential for overlap in forage plants used by caribou and livestock is among the grasses, sedges, and succulent forbs. On those portions of the LeClerc Creek Range Allotment that overlap with the caribou recovery area, these plants are mostly found within small meadows and streamside riparian zones. Stream reaches in the caribou recovery area tend to be headwaters that are steep and incised. They are often not easily accessible to cattle. We have not documented any sites within the caribou recovery area where cattle are over-utilizing green forage resources.



Figure 6. Cattle have poor access to the higher elevation portions of the allotment due to steep topography and dense forest stands. Molybdenite Ridge is in the background.

The following table displays the existing acres of suitable (“target”) timber stands for caribou, by allotment pasture.

Table 13: LeClerc Creek Range Allotment – Molybdenite Caribou Management Unit (CMU) habitat data

Allotment pasture	Approx. acres in CMU	Approximate livestock grazing period	Approximate acres of caribou “target” stands	
			spring season (April 20 - July 7)	summer season (July 7 – Oct. 16)
Lower Bunchgrass	272	June 1 - July 6	0	0
Mineral Creek	3,193	July 7 - Sept. 15	187	483
Upper Bunchgrass	4,767		34	476
Dry Canyon	12	Sept. 16 - 30	0	0
Fourth of July	0		0	0
Total	8,244	June 1 - Sept. 30	221	959

Seclusion - As is the case with elk, caribou might be disturbed and displaced from suitable habitats by cattle. Vehicle traffic and the continued presence of humans in caribou habitat could also disturb the animals. The range allotment permittee does not require vehicle access on any restricted road within the caribou recovery area.

3. Effects of the Grazing Alternatives

Effects to Forage - As previously mentioned, livestock make only incidental use of arboreal lichens and shrub species preferred by caribou. The effects of the allotment grazing alternatives to these caribou food plants should be insignificant or discountable. This discussion will focus on green forage plants such as grasses, sedges, and forbs, which may be utilized by both caribou and cattle during the spring and summer months.

The following table displays the acres of target stands for caribou in the spring and summer seasonal zones, by allotment management alternative.

Table 14: LeClerc Creek Range Allotment - acres of spring / summer stands for caribou in the allotment, by alternative

Caribou seasonal zone by allotment pasture	Approximate acres of target stands for caribou			
	Alternative A (no change)	Alternative B (no grazing)	Alternative C	Alternative D
spring	221	0	306	330
Dry Canyon	0	0	85	86
Mineral Creek	187	0	187	210
Upper Bunchgrass	34	0	34	34
summer	959	0	96	98
Mineral Creek	483	0	30	32
Upper Bunchgrass	476	0	66	66
Total spring & summer stands in the allotment	1,180	0	402	428
Total allotment acres in CMU	8,244	0	6,114	7,749

Alternative A (no change) - The grazing allotment would contain approximately 1,180 acres of caribou target stands in the spring and summer seasonal zones. Cattle would be off the allotment during the months of April and May. Livestock grazing would not affect green forage resources for caribou during that time. Cattle could be sharing green forage resources with caribou during the latter part of the spring, and over the entire summer use period for caribou. As previously mentioned, we have not documented any sites within the caribou recovery area where cattle are causing unacceptable impacts to green forage resources. We would not expect this situation to change.

Alternative B (no grazing) - Livestock grazing on grasses, sedges, and forbs within the caribou recovery area would cease. In the absence of this intensive, periodic grazing, some grass plants could become rank and decadent over time. Conifer encroachment could accelerate in small meadows. Sedges and succulent forbs could increase in vigor and diversity in some local areas.

Alternatives C and D - The turn-on date for the allotment would be pushed back by two weeks each year. Thus, there would be no potential for livestock to utilize green forage plants eaten by caribou through June 15.

Areas above about 5,000 feet south of Molybdenite Ridge would be removed from the allotment. This action would result in approximately 2,130 fewer acres of the caribou recovery area within the allotment with Alternative C and 409 fewer acres with Alternative D. Cattle likely have poor access to most of these acres, due to intervening, dense stands of trees and steep topography. The grazing allotment would contain at least 750 fewer acres of target stands for caribou in the spring and summer seasonal zones, compared with the existing condition. Thus, the potential overlap in green

forage utilization by livestock and caribou could be reduced in both time and space, from the existing condition.

Effects to Seclusion

Alternative A (no change) - There would be no change in the potential for caribou to be disturbed by livestock or by allotment management activities.

Alternative B (no grazing) - There would be no risk of disturbance to caribou in the Molybdenite CMU associated with livestock operations.

Alternative C (proposed action) - The potential for overlap between livestock and caribou use of the allotment would be effectively reduced in both time and space. Thus, the risk of disturbance to caribou would be reduced from the present condition.

Cumulative Effects - We must evaluate the cumulative effects of forest management practices within each caribou management unit (USDI 2001). No other livestock are grazed in the Molybdenite CMU besides those associated with the LeClerc Creek Range Allotment. Appendix C lists the other forest management projects / uses presently underway or proposed in the LeClerc Grizzly Bear Management Unit (BMU). The Molybdenite CMU is entirely included within the LeClerc BMU.

No timber sales are active or proposed on NFS lands in the Molybdenite CMU. The only active or proposed projects in the CMU include fish habitat improvements (culvert replacements, in-stream structures), and ongoing activities such as routine road maintenance, noxious weed control, and public recreation. The majority of these activities and uses would occur within 0.25 mile of open roads. The potential for cumulative effects to caribou forage resources and seclusion should be insignificant or discountable.

4. Effects Determination - Livestock make only incidental use of the arboreal lichens and shrubs that are important forage resources caribou. Livestock grazing would have insignificant or discountable effects to these caribou foods.

There would continue to be some potential for overlap between livestock and caribou use of green forage plants with Alternatives A, C, and D. Livestock do not appear to be over-utilizing green forage anywhere in the Molybdenite CMU, and appear to have poor access to the higher elevations of the CMU. With Alternatives C and D, the overlap in livestock and caribou use of the allotment would be reduced in both time and space.

Based on the preceding discussion, the effects determination for Alternative B would be “not likely to adversely affect - beneficial effect”. Alternatives A, C, and D as proposed “may affect, but are not likely to adversely affect,” caribou.

Risk Analysis

Alternative A (no change)
Consequence of adverse effects = moderate
Likelihood of adverse effects = low
Risk index value = $5 \times 1 = 5$

Alternative B (no grazing)
Consequence of adverse effects = low
Likelihood of adverse effects = none
Risk index value = $1 \times 0 = 0$

Alternatives C and D

Consequence of adverse effects = low

Likelihood of adverse effects = low

Risk index value = $1 \times 1 = 1$

D. bald eagle (CNF sensitive species, FWS species of conservation concern)

1. Management Framework - The Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act protect bald eagles from a variety of harmful actions and impacts. On August 8, 2007 the USDI Fish and Wildlife Service (FWS) removed bald eagles from the threatened and endangered species list. Upon de-listing, the FWS developed the National Bald Eagle Management Guidelines “to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities” (USDI 2007). The Forest Plan (page 4-41) states that active and potential bald eagle nesting habitat will be inventoried. In addition, the cumulative effects of forest management on nest sites must be evaluated to insure the continued suitability of existing and potential sites.

2. Existing Conditions - The most important component of habitat used by eagles is a foraging area that provides enough food with a minimum of disturbance from humans (Stalmaster 1987). Foraging areas are usually along rivers or on lakes and marshes larger than 40 acres. Fish and carrion are the primary foods of this bird. The Pend Oreille River provides the most productive foraging habitat in Pend Oreille County. There are no fish-bearing lakes within the LeClerc Creek Range Allotment. Eagles have never been documented using fish-bearing streams within the allotment. This is likely because these waters are too small and / or too heavily vegetated to allow easy access by these large-bodied birds.

Nest trees selected by bald eagles are commonly among the largest in the stand, often towering above the main forest canopy (Stalmaster 1987). Nest and perch trees are typically located within one mile of a foraging area. Eagles could potentially select a tree for nesting within the allotment, although the best potential nest trees are located on private land in the nearby Pend Oreille River Valley. In the valley bottom, eagles have clear flight paths to large cottonwoods and other trees along the river. The great majority of known nests in the county are located within close proximity to the river.

Bald eagles often use old growth forest stands as winter roost sites. The tall, spreading tree canopies of these stands can provide the birds with insulating cover during very cold weather. No evidence of an active winter roost site exists in the range allotment.

3. Effects of the Grazing Alternatives / Effects Determination - Trees that could provide potential nest, perch or roost sites for eagles would not be affected by livestock grazing. There are no fish-bearing lakes or rivers in the allotment. Eagles have not been documented foraging on fish-bearing streams on the allotment. This is likely due to the relatively small size of the streams, the presence of dense overhead cover on most stream reaches, and the nearby presence of the Pend Oreille River, which provides a much more suitable foraging environment.

Based on these considerations, the alternatives as proposed would have no direct, indirect, or cumulative impacts to bald eagles.

E. gray wolf (CNF sensitive species)

1. Management Framework - Recent legislation passed by Congress directed the USDI Fish and Wildlife Service to officially remove the gray wolf from the threatened and endangered species list in the Northern Rocky Mountains. Thus, wolves in the eastern third of Washington came under state management in May, 2011. The species is presently listed as a sensitive species in Region 6 of the Forest Service, which includes the Colville National Forest. Forest Plan direction for wolf management is to investigate sightings and protect any discovered resident animals.

In the Northern Rocky Mountains, wolves prey mainly on deer and elk (Hansen 1986). “Management of deer and elk habitat Forest-wide is concerned primarily with maintenance of adequate winter range habitat” (Forest Plan Appendix B-102). Standards and guidelines for managing winter ranges on the CNF are located on pages 4-97 through 4-100 and 4-105 through 4-108 of the Forest Plan. East of the Pend Oreille River, the Forest Plan emphasizes managing winter range for elk. Livestock grazing systems should be compatible with the needs of wintering big game. The needs of wildlife should be emphasized when designing range improvements (Forest Plan page 4-107).

2. Existing Conditions - A wolf pack is basically a family unit, containing an adult pair (the pack’s leaders), this year’s pups, and oftentimes young of past years (Mech 1991). The presence of a pack means that breeding is occurring and a pack territory has been established. In 2009 biologists confirmed the presence of the first pack of wolves on the CNF. This pack’s territory is thought to include virtually all of the LeClerc Creek Range Allotment. Washington Department of Fish and Wildlife (WDFW) biologists collected hair samples from an adult member of this pack for DNA analysis. The test confirmed the animal was a wild wolf that probably emigrated here from northwest Montana. Lands within the range allotment and surrounding area continue to be the territory of the Diamond Wolf Pack.

Den Sites - Wolves commonly locate their dens on moderately steep slopes with southerly aspects. Dens are usually within 400 feet of surface water and are either dug out or are placed in caves, rock crevices, or even abandoned beaver lodges (Mech 1991). To date, the Diamond Wolf Pack has dug out den sites outside of, but within proximity to the allotment.

Rendezvous Sites - These are areas where a wolf pack "headquarters" once the pups are old enough to leave the den area (late May - early July) but are not yet strong enough to travel with the adults. These sites are typically near water, often in small meadows, heavily shaded lowlands with dense vegetation, or simply at the scene of a recently killed elk or other animal (Mech 1991).

Many forested wetlands and small meadows with dense, adjacent cover could potentially serve as rendezvous sites on the allotment. In 2009 the Diamond Pack established a rendezvous site at a forested wetland located adjacent to a homestead meadow. Cattle grazing within close proximity did not cause the wolves to abandon the site or result in any other apparent changes in wolf

behavior. Cattle appear to be causing few impacts to vegetative cover around most forested wetlands on the allotment, likely because dense timber stands impede their access to many of these sites. Where they have good access, livestock can reduce the density of the vegetation; decreasing the available hiding cover and suitability of these areas as rendezvous habitat. This is of particular concern along the lower portions of the Middle Branch LeClerc Creek.

Wolf / livestock interactions - Bangs et al. (in Wiles et al. 2011) characterized wolf depredations on livestock as unimportant to the regional livestock industry, but having the potential to affect the economic viability of some ranchers. Wolves don't necessarily predate livestock whenever they are encountered, but most packs are likely to depredate at some point. Some packs will depredate with increasing frequency, while others may do so once or twice a year, or less frequently (USDI in Wiles et al. 2011). Wolves have shared the LeClerc Creek Range Allotment with livestock since 2009 with no confirmed depredations reported to date. The permittee's calves are born off the Forest in the winter. Thus, any wolf using the allotment would not have access to afterbirth or very young, highly vulnerable calves. In order to positively determine if a cow or calf has been lost to wolf depredation, the carcass would need to be discovered quickly. In the recent past, the odds of this occurring on this range allotment would have been small, given the densely forested nature of the area, and the fact that minimal range riding occurred on the allotment. In the past 1-2 years, range riders have been sponsored by the Washington Department of Fish and Wildlife on this allotment. It is unclear whether this activity will continue to be funded into the future.

Natural prey - Although wolves hunt grouse, beavers, and many other small animals, their main prey items on the Forest are likely moose, elk and deer (Hansen 1986). Habitat conditions that benefit these ungulates will generally provide similar benefits to other wolf prey species. Moose are listed as a sensitive species for the Forest, and are covered later in this document. This discussion will focus on deer and elk.

Individual drainages in the LeClerc Creek Allotment support small numbers of elk (perhaps 10-20 head) and scores of deer (pers. comm. with S. Zender 2005). Most deer in the area are whitetails. White-tailed deer will graze unperturbed in close proximity to cattle. Mule deer prefer more rugged, mountainous terrain than do livestock. Rocky Mountain elk can make use of steeper slopes and dense shrubfields that cattle tend to avoid. Elk will generally exclude themselves from areas that cattle are using. If they are disturbed, elk are capable of moving several miles to find other foraging areas.

Fencing is minimal on this range allotment. Wild ungulates are adept at passing through fences by either leaping over or passing under them (Marchinton and Hirth in Halls et al. 1984). On occasion, deer could become entangled on barbed wire fencing and die. Such rare events represent an insignificant mortality factor to the overall deer populations on the allotment.

Calving / fawning sites - Because the nutritional needs of pregnant big game animals are very high, they must have access to large amounts of green forage during the spring. Big game calving / fawning sites are often located where there is surface water, dense cover, and abundant forage all within close proximity to each other (Thomas et al. 1979). Forested wetlands or other riparian habitats often provide prime calving / fawning sites. The LeClerc Creek Range Allotment contains these habitats. Along some local stream segments in the allotment, livestock browsing of riparian shrubs has reduced the density and diversity of these plants and suppressed regeneration. Livestock

trailing in these sites has sometimes broken down stream banks and created areas of bare soil. These local impacts to hiding cover and forage values may be reducing the suitability of these areas as birthing and rearing sites for wild ungulates. The Middle Branch of LeClerc Creek is the primary area of concern; particularly along its lower reaches.

Green forage - Meadows and riparian areas are important foraging sites for big game on the allotment. Cattle also tend to concentrate their grazing in these areas. While the diets of big game animals overlap with domestic stock to varying extents, it is difficult (and potentially misleading) to calculate a “forage reservation” for big game to be provided from areas grazed by livestock. A better way to ensure that the forage base is adequate for both livestock and big game is to allocate use of the allotment in time and space (pers. comm. with J. Lyon, R. Schott, and T. Kombreck 1999). At the same time, utilization should be monitored to ensure that productivity and vigor of forage plants is being maintained.

A number of studies have concluded that properly managed cattle grazing can improve forage quality and use by elk either in the fall or in the spring (Burritt and Banner 2013). Livestock grazing tends to reduce standing dead vegetation and increase the percentage of green grass on rangeland. Ganskopp et al. (2007) reported that when cattle grazed grasses in the spring to 50 percent utilization, the vegetative re-growth was 77 percent higher in protein and 20 percent higher in digestibility than un-grazed grasses. Livestock grazing can be concentrated for a given time in smaller areas (pastures), ensuring full utilization of available grasses before they are moved on to another area. In contrast, elk are not restrained to a limited area, and they tend to utilize preferred plants and locations first. This can cause forage in more un-used areas to become more mature, accumulate more standing dead material, and become less palatable (Ganskopp et al. 2007).

In the Northern Rocky Mountains, if livestock grazing has not deteriorated foraging sites and a variety of shrubs and forbs exists, there is little competition for forage between livestock and white-tailed deer (Peek, in Halls et al. 1984).

Within the LeClerc Creek Range Allotment, green forage in upland areas tends to be under-utilized by cattle, while utilization has at times exceeded Forest Plan standards in certain riparian sites. In large part this is due to poor controls over stock movement in the allotment. The permittee moves his cows to different pastures in the allotment according to an approximate schedule. However, rather than stay in a given pasture long enough to fully utilize the available forage, some cows oftentimes move back to favored meadows in neighboring pastures, re-grazing those sites.

Noxious weeds exist on many of the grazable areas of the allotment. These exotic plants are usually not as palatable, and can successfully out-compete native forage plants for sunlight, water, and nutrients. Certain noxious weeds emit chemicals into the soil that suppress the growth of other plants. Heavy infestations of noxious weeds can dramatically reduce the value of key grazable areas, impacting both domestic and wild ungulates.

Noxious weeds are often suppressed by livestock grazing, especially if the plants are grazed early in their growth cycle. On the other hand, sites where cows concentrate can develop areas of bare ground. Bare soils are very suitable places for noxious weeds to colonize, especially if there are nearby seed sources. When the cattle are first brought onto the allotment from off-Forest, they may

bring in weed seeds attached to their bodies or in their feces. Cattle may also disperse weed seeds from plants already present within the allotment.

The CNF has an active program of spraying herbicides to kill noxious weeds on meadows, roadsides, and other areas of the allotment. In recent years, these treatments have led to marked reductions in weed coverage and improvements in the vigor of grasses on sites like Fourth of July Meadow.

Aspen - Aspen trees provide important food resources for big game and other wildlife. Elk may feed on the bark, branch apices, and sprouts throughout the year (DeByle and Winkour 1985). Aspen trees are uncommon to rare on the allotment, and mainly exist as small clumps or individual, widely scattered trees. With forest succession, aspen trees are being over-topped by growing conifers throughout the area. In the absence of a disturbance such as wildfire, overhead tree canopies will become more closed over time and light-loving aspen trees will become shaded out. Compounding this effect, repeated livestock browsing on aspen sprouts is keeping the young trees from growing beyond a foot or two tall in some locations. This is mainly a concern where cows have easy access to existing aspen clones, such as on the edges of meadows. If sprouts are not allowed to grow out of reach of browsing animals, the overstory trees of these clones will not be replaced when they die out.

Winter range - The allotment contains about 4,736 acres of designated big game winter range (Forest Plan Management Areas 6 and 8). Approximately 807 acres of lands in other management areas are also suitable wintering areas. These areas are at lower elevations, adjacent to designated winter range, and contain some good foraging sites for wintering big game.

When grass / forb meadows become buried under snow, elk must then either switch to browsing shrubs to a much greater extent, or move to low elevation, private pasture lands off the Forest (pers. comm. with S. Zender 2005). The winter diet of deer in eastern Washington mainly consists of evergreen and deciduous woody plants, and lichens (Peek, in Halls et al., 1984).

On the LeClerc Creek Range Allotment, upland shrub species palatable to big game include serviceberry, shiny leaf ceanothus, red-stem ceanothus, snowberry, oceanspray, wild cherries, Douglas maple, aspen and others. Riparian shrubs utilized by big game include willows, red-osier dogwood, alders, and others. With the possible exception of aspen, livestock utilization of upland shrubs is very incidental on this allotment. During the fall, when they are most prone to include woody browse in their diets, cattle tend to focus on riparian shrubs such as willows, alder, and dogwood.

The permittee finishes up his grazing season in the Dry Canyon Pasture, which is almost entirely on elk winter range. Livestock using this pasture are confined to flat, grazable areas adjacent to the Dry Canyon Road (FR 1933) which runs directly up the narrow canyon. Cattle cannot access the steep breaks on either side of the canyon. In contrast, elk can utilize winter forage on the breaks above the canyon, but are prone to being disturbed in the canyon itself by snowmobile use of the road. Thus, late season grazing in the Dry Canyon Pasture likely has little impact to winter foraging opportunities for big game in this pasture.

3. Effects of the Grazing Alternatives

Effects to Wolf / Livestock Conflicts

Alternative B (no grazing) - There would be no opportunity for wolves to predate domestic stock in the LeClerc drainage.

Alternatives A (no change), C and D - The allotment management plan (AMP) would require the permittee to remove any discovered sick or injured stock off the allotment, so they are not targeted by large carnivores. The AMP would also require the permittee to work with the Washington Department of Fish and Wildlife in completing the removal, destruction, or treatment of any discovered dead livestock (see the previous section on required mitigation). These measures could reduce the risk of wolves becoming conditioned to viewing livestock as food.

There is little potential for conflict between livestock grazing and the successful denning or rearing of wolves. However, the continued presence of livestock near these wolf activity centers could potentially increase the risk of livestock depredation. With Alternatives C and D, the turn-on date for the allotment would be pushed back to June 15. This would effectively reduce the overlap between livestock grazing and the wolf denning period (April 1 to June 15).

Effects to Wolf Prey (big game)

Alternative A (no change) - Cattle distribution across the allotment would remain less than optimal, with animals tending to concentrate in lowlands and streamside riparian areas. Riparian shrubs and other vegetation would continue to be well-utilized along certain stream reaches. The suitability of these sites as big game calving / fawning areas could be reduced to some extent.

Grasses and forbs in upland areas would continue to be under-utilized by cattle. Some cows would continue to drift between pastures, potentially re-grazing plants on preferred sites. Stock would also continue to drift off the allotment, due to the lack of adequate fencing and other control structures.

The risk of livestock transporting noxious weed seeds onto and across the allotment would remain unchanged. The Forest Service would continue to monitor and control weed infestations in the allotment, as is standard practice.

Livestock would continue to make only incidental use of upland shrubs that provide important browse for big game, particularly in the winter.

Alternative B (no grazing) - Direct effects from cattle grazing, trampling or trailing in local riparian habitats that currently occur on an annual basis would cease. Stream banks and wet meadows that are being mechanically impacted by cattle trailing would recover over time. Browsing of riparian shrubs by cattle would cease. Riparian vegetation would become more dense and diverse. Over time the suitability of these sites as calving, fawning, and rearing habitat for big game animals would be enhanced. Regeneration in aspen clones that was suppressed by browsing cattle should recover over several years. Of the three alternatives, Alternative B would result in the greatest improvements in the productivity and diversity of deciduous shrubs and trees on the allotment.

Cattle would no longer be a vector for the spread of noxious weeds in the area.

The condition of meadows would likely improve for the first few years. There would be fewer areas of bare ground on these sites. Native forage plants could increase overall while weedy “invader” species such as strawberry, yarrow, plantain, and dandelion could decline. The former plants tend to be more nutritious and palatable to big game than the latter. Over time there would be more accumulation of dead plant material that would insulate the ground, provide some water-holding capacity and decrease the potential for surface soil movement and erosion.

Grasses evolved with the periodic removal of vegetative material through fire, insects, or grazing by ungulates. In the absence of livestock grazing, grasses growing in meadows would accumulate excess amounts of dead material over time. This accumulated litter may eventually shade out new shoots and cause the plants to go into a “self-imposed stress” (Knapp and Seastedt 1986). The vigor of the plants may be compromised and the meadows may become less productive and healthy.

In the absence of livestock grazing, young lodgepole pine and other conifers would likely accelerate their encroachment into the meadows, potentially leading to the conversion of these openings to forestland over time (pers. comm. with S. Zender 2005). Of the three alternatives, the need to actively manage meadows to keep them in a productive condition for big game animals would be much greater with Alternative B. The ability of the Forest Service to continue meadow maintenance treatments over time would be subject to available funding.

Alternatives C and D - The annual turn-on date for the allotment would be pushed back from June 1 to June 15. Elk would be able to access green forage in the area for an additional two weeks in the spring, free from disturbance by domestic stock.

New rangeland improvements (fencing, watering sites, etc.) would be employed to better distribute grazing pressure across the allotment, and reduce livestock use of lowland riparian areas.

Within meadows, periodic maintenance would be required to maintain the vigor of green forage, and prevent the conversion of these sites to forest cover over time. This would be particularly true in the case of Fourth of July Meadow, which would be removed from the allotment. The ability of the Forest Service to continue meadow maintenance treatments would be subject to available funding.

At selected locations, the Forest Service would utilize fencing, piled slash, or other means to protect aspen sprouts that are receiving constant browsing pressure. Young, encroaching conifers would be cut out within and around these clones in order to increase light levels for the hardwoods. Over the course of several years, protected aspen clones should respond with new sprouting from their root systems, ensuring continuation of the clones. Long-term, local increases in forage and hiding cover for big game could be the result of these restoration projects.

With Alternatives C and D, the Dry Canyon Pasture would be expanded. This would result in the allotment containing about 275 additional acres of designated elk winter range. The area of “biological” winter range would increase by approximately 1,486 acres. We anticipate that most winter range areas added to the Dry Canyon Pasture would remain essentially inaccessible to cattle, due to dense stands of timber, incised draws, steep breaks and side-hills, and existing control structures. Livestock would continue to make little use of upland shrubs on winter ranges throughout the allotment.

Adaptive Management - The Forest Service would monitor key grazing areas (including riparian habitats) in the allotment to assess utilization and vegetation trends. If green forage or browse utilization exceeds the standards proposed in the monitoring and adaptive management plan (Appendix D), we would take management actions to reverse this trend. These could include additional pasture controls, shortening the grazing period in a given pasture, or reducing the numbers of cow / calf pairs authorized for the allotment. The long term effects should be improvements in the vigor of individual forage plants for both cattle and big game animals.

Effects Summary - The following tables provide a brief summary of the effects of the grazing alternatives on wolves and the habitats essential for their prey.

Table 15: LeClerc Creek Range Allotment - big game habitat acreage summary

Big game habitat type	Approximate acres in the allotment			
	Alternative A	Alternative B	Alternative C	Alternative D
Upland foraging sites (meadows, parks, forb fields)	774	0	506	800
Riparian foraging / parturition sites (riparian forest / shrubs, wetlands)	1,580	0	1,347	1,557

Table 16: LeClerc Creek Range Allotment - gray wolf effects summary

Habitat parameter		Alternative A (no change)	Alternative B (no grazing)	Alternatives C and D (modified grazing with adaptive mgt.)
wolf / livestock conflicts		Mitigation intended to reduce the risk of wolves learning to depredate livestock.	No potential for livestock depredation by wolves.	Mitigation intended to reduce the risk of wolf / livestock conflicts as with Alternative A.
Wolf prey habitats	<i>riparian shrubs / aspen</i>	Livestock would continue to loiter in riparian lowlands, particularly later in the year. Livestock utilization of riparian shrubs / aspen sprouts would continue to reduce browse and hiding cover values for big game at certain local sites. The suitability of these areas as wolf rendezvous sites could be diminished.	Livestock browsing of shrubs / deciduous tree regeneration would cease. The density and diversity of these woody plants should be enhanced over time at locally impacted sites.	Acres of riparian shrublands reduced on the allotment with changes in the allotment boundaries. New range improvements intended to better distribute cows across the allotment. Riparian habitat values monitored over time. Adaptive mgt. utilized if necessary to maintain or improve riparian habitat function.
	<i>green forage</i>	Livestock would continue to re-graze preferred sites, reducing green forage biomass and vigor on some sites. Continued grazing of meadows would tend to maintain grass vigor and keep these sites in an open, productive condition for big game. Livestock would continue to be a vector for noxious weed spread.	Recovery of any locally degraded sedges, forbs and grasses. Potential long-term reduction in grass vigor / palatability across the allotment in the absence of grazing. This alternative would require active meadow maintenance (burning, conifer tree removal, etc.). Livestock would no longer be a factor in the spread of noxious weeds.	Acres of wetlands reduced on the allotment with changes in the allotment boundaries. New range improvements intended to reduce pasture re-grazing and better distribute cows across the allotment. Periodic maintenance of meadows required to maintain grass vigor and forestall conversion of these sites to forestland. Somewhat reduced risk of noxious weed spread.
	<i>upland shrubs</i>	Insignificant or discountable use of these plants by livestock.	No effects	Insignificant or discountable use of these plants by livestock.

Cumulative Effects to Big Game (Wolf Prey Animals) - Cumulative effects to big game could be analyzed at the scale of the LeClerc Grizzly Bear Management Unit (BMU). The BMU includes the entire LeClerc Creek drainage, and likely contains the home ranges of several discrete bands of elk. Beyond this area, cumulative effects to big game from livestock grazing on the allotment become stable or qualitatively / quantitatively irrelevant or inconsequential. No other livestock are grazed in the BMU besides those associated with this allotment. Appendix C lists the other forest management projects / uses presently underway or proposed in the BMU.

In the last two decades, timber sales and road construction on Stimson Lumber Company lands opened up many dense stands and created new pathways for livestock to move through large portions of the LeClerc BMU. Transitory range for cattle was created in many harvest units and on new roads. Growing conditions for existing big game food plants such as grasses, forbs, and upland shrubs was often improved. Many created openings persist to this day on Stimson lands. Over the same time frame there was one timber sale on NFS lands in the BMU; Whiteman Timber Sale. Harvest units associated with this sale have mostly regenerated to the point where they are no longer providing transitory range for cattle, or good foraging habitat for big game.

It is possible that livestock access to some riparian areas and aspen stands was improved due to past timber harvest and road construction. However, streams were given no-cut buffers with all timber sales on Stimson and NFS lands. In most cases, regenerating conifers and shrubs in timber harvest units reduced the permeability of these stands to livestock within roughly ten years. Dense plantations often became more effective barriers to cattle movement in the allotment than the forest stands they replaced.

Active or planned timber sales will create openings on almost 1,400 acres of forest stands in the BMU (see Appendix C). Any grasses and other green forage plants within these new openings will have improved access to sunlight, water, and soil nutrients. The plants should become more robust and palatable within one or two growing seasons. Additional forage for both livestock and big game could be provided on these sites for ten or more years following harvest. Improvements in forage production are likely to be best realized where prescribed burning is used to treat logging slash (mainly NFS lands). Livestock could spend more time foraging in openings created by logging, and less time in lowland riparian habitats. These effects would be additive to the improvements in livestock distribution we expect to occur with Alternatives C and D, as described earlier. Riparian areas within timber sale units would receive no-cut buffers or selective harvest prescriptions, depending on the stream class and other site conditions.

In 2015 or 2016, the Forest Service is scheduled to complete a prescribed burn in the Fourth of July Creek area to improve forage values on elk winter range. This project would increase forage vigor and palatability on more than 200 acres of shrublands, dry parklands, and meadows. Forage production for big game should be enhanced for 10-20 years on these sites.

Livestock grazing would contribute to the spread of noxious weeds in the BMU. These effects could be cumulative to those resulting from timber sales and other forest management projects that expose soils. The Forest Service would implement noxious weed prevention, pre-treatment and monitoring actions with each active and proposed forest management project, as is standard procedure. Noxious weed management does not appear to be a consideration on state and private forest lands in the BMU. Weed infestations are likely to increase on those properties over time.

The Forest Service would need to continue its ongoing program of weed monitoring and control, in order to check the spread of weeds in the BMU.

Cumulative Effects to Wolf / Livestock Conflicts - Continued grazing on the LeClerc Creek Range Allotment and other allotments across the Forest would cumulatively increase the potential for lethal wolf control actions on the Forest. In 2012, aerial marksmen with the WDFW removed most members of the Wedge Wolf Pack in Stevens County, due to continuing cattle depredations attributed to that pack. This was the first official control action of wolves in Washington since they began to re-colonize the state.

CNF biologists and range conservationists recently crafted mitigation measures intended to reduce the risk of livestock depredations on the Forest (see the required mitigation section of this report). All new allotment management plans for range allotments would include these measures. While we expect that these measures would not eliminate livestock depredations by wolves, they could reduce the opportunities for wolves to begin associating livestock with food.

4. Effects Determination - With Alternative B (no grazing), there would be no risk of livestock depredation by wolves in the LeClerc Creek Range Allotment, and thus no potential for related wolf control actions by state wildlife officers. For this reason, Alternative B could beneficially impact wolves.

Wolves are intelligent, highly adaptive, and prolific animals. The history of wolf recovery in the West includes many lethal control actions of wolves known to have depredated livestock. In spite of these continuing actions, and liberal hunting and trapping seasons in nearby states, wolves have managed to quickly colonize northeastern Washington and beyond. The only real threat to the full recovery of the species in the state is lack of human tolerance. Based on this and the previous discussion, the Alternatives A, C and D as proposed may impact individual wolves, but would be unlikely to result in a trend to federal listing or loss of viability of the species on the Forest.

F. great gray owl (CNF sensitive species)

1. Management Framework - On the CNF, raptors as a group are classified as Management Indicator Species (MIS). Forest Plan (Page 4-40) direction for raptors is to “Manage the nest sites and surrounding areas to insure their continued usefulness to the respective species”.

2. Existing Conditions - In British Columbia, breeding habitats for great gray owls primarily include Douglas fir forests with patches of aspen, but also Douglas fir / lodgepole pine cover types and lodgepole / spruce cover types. Nest stands are located in the vicinity of hunting habitats that include marshes, lakes, muskegs, wet meadows and pastures. Nest stands in the northwestern U.S. are strongly associated with extensive meadow systems, clear-cuts, and other forest openings (Hayward and Verner 1994). Great gray owls may utilize large, broken-topped snags and mistletoe platforms for nesting. They often take over the abandoned nests of goshawks, red-tailed hawks, or other raptors.

Great gray owls forage for voles and other rodents in open, grassy habitats. In northeast Oregon this bird may prefer to forage in open forests that have a heavy grass under-story (Hayward and

Verner 1994). Prey animals of this species require abundant green vegetation such as grasses, sedges, and forbs, and concealing cover near ground level.

In general, the LeClerc Creek Range Allotment contains few extensive wet and dry meadow systems and open parklands that are characteristic of great gray owl habitat in the Pacific Northwest. Meadows within the allotment are being grazed to within utilization standards and exhibit few areas of bare ground. However, due to poor existing livestock movement controls, some preferred areas (ex. Hanlon Meadow) appear to be receiving sporadic use by groups of cattle throughout the grazing season. Consequently, low cover for rodents on these sites may not have a chance to develop for extended periods. To some extent grazing appears to be maintaining the vigor of grasses in meadows across the allotment. There is evidence that grazing is retarding forest succession in meadows, and maintaining these sites as openings.

Livestock appear to be causing local and relatively minor impacts to wetlands on the allotment, primarily due to animals trailing through saturated soils at some of these sites. In the late 1990s, the Forest Service, Kalispel Tribe, and volunteer groups partnered together to construct a large (15+ acre) livestock enclosure around a wet meadow / riparian shrub complex on Whiteman Creek in T. 37N, R. 44E, Section 32, SW ¼.

Forest stands in the allotment are normally too densely stocked with trees and shrubs to provide good foraging opportunities for great gray owls. Very few acres of park-like stands with grass under-stories exist in the area. Timber harvest units that create forest openings could be exploited by this owl. However, owing to the relatively rapid growth of conifers and brush on the allotment, only very recently created openings (perhaps five years or less) are likely to be suitable.

Great gray owl sightings are rare in northeast Washington. There is one known record of this species from the range allotment. Nesting has never been documented on the Newport-Sullivan Lake Ranger Districts.

3. Effects of the Grazing Alternatives

Effects to Nest Habitat - Cattle grazing should have no effect on potential nest trees, nest groves, or the future development of these resources.

Effects to Prey Resources - It has been reported that livestock grazing could negatively affect rodent populations important to great gray owls (Ulev, in Williams 2012). However, a recent California study found that pocket gophers numbers were significantly higher in grazed vs. un-grazed meadows (Powers, in Williams 2012). More study is needed to better assess the impacts of grazing on prey populations and habitat quality (Williams 2012).

Alternative A (no change) - Continued grazing would tend to maintain the vigor of grasses in meadows, and retard forest succession on these sites. However, livestock would continue to be able to access key meadows throughout the season, owing to poor existing movement controls. Ground cover for rodents could be kept in less than optimal condition on these sites. The risk of livestock transporting noxious weed seeds onto and across the allotment would remain unchanged. Noxious weed spread can reduce local food and cover resources for native rodent populations.

Alternative B (no grazing) - In the absence of grazing there would be more abundant cover near the ground for voles, pocket gophers, and other rodents at suitable foraging sites for great gray owls. Over time, grasses would tend to accumulate dead leaves and become rank (Knapp and Seastedt 1986). The vigor of the plants might decline and meadows may become less productive and healthy overall; potentially impacting small mammal populations. Of the three alternatives, the need to actively manage meadows to keep them in an open and vigorous condition would be greatest with Alternative B. Livestock would no longer be a vector for the transport of noxious weeds in the LeClerc Creek drainage.

Alternatives C and D - With Alternative C, the allotment would contain approximately 408 fewer acres of meadows / parklands, forb fields, and wetlands. Some fraction of these acres might provide suitable foraging opportunities for great gray owls. With Alternative D, there would be an increase of about 46 acres of these habitats within the allotment.

With both alternatives, the Fourth of July Pasture would be dropped; resulting in Fourth of July Meadow no longer being grazed. Owing to its comparatively large size, habitat complexity, and isolation from open roads, this meadow complex could represent the best potential foraging area for great gray owls in the LeClerc Creek drainage. Habitat conditions for voles and mice could improve in the meadow, at least over the short term. Periodic maintenance activities such as burning or mechanical conifer removal would be required to maintain the vigor of the green vegetation, and prevent the meadow's conversion to forest cover over time.

New rangeland improvements (fencing, watering sites, etc.) would be employed to better distribute grazing pressure across the allotment, and reduce livestock use of lowland riparian areas. Cows should not have the opportunity to concentrate grazing on preferred meadows for the entire season, as is presently the case. In the absence of continuous grazing pressure, grasses and forbs on a given pasture should have the ability to recover more fully and provide more concealing cover for voles, mice, and other rodents.

Adaptive Management - Monitoring and adaptive management would be employed to ensure that green forage in key areas is not over-utilized, and that riparian habitats and water quality are not degraded (see Appendix D). These management actions should lead to improvements in green forage production and low cover for prey species, in potential foraging sites for great gray owls.

Cumulative Effects - Cumulative effects to meadows / parklands, and wetland habitats that could provide foraging habitats for great gray owls would be similar to those already described in the previous section on grizzly bears.

4. Effects Determination - The LeClerc Creek Range Allotment contains few larger meadows and wetland complexes, and very limited acreage of forested parklands. Thus, the allotment may be only marginally suitable for great gray owls. Continued grazing of the allotment would have no effect on potential nest trees and insignificant or discountable effects on the development of future nesting habitat for great gray owls. Livestock utilize the same forage plants required by owl prey species, and may remove or degrade ground cover required by those species. On the other hand, livestock grazing tends to maintain the vigor of green forage plants over time and greatly retards forest succession in meadows and other openings on the allotment. Based on these considerations,

the alternatives as proposed may impact individual great gray owls but would not be likely to lead to a trend to federal listing or loss of species viability across the Forest.

G. harlequin duck (CNF sensitive species)

1. Management Framework - The Forest Plan provides no direction for managing habitat specifically for this species. The Inland Native Fish Strategy (USDA 1995) provides the following standards and guidelines for grazing management in riparian areas.

- Standard and guideline GM-1: Modify grazing practices (e.g. accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices are not effective in meeting Riparian Management Objectives.
- Standard and guideline GM-3: Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish.

These measures are intended to maintain or improve the condition of riparian habitats, including those that could be used by harlequin ducks.

2. Existing Conditions - On the Newport-Sullivan Lake Ranger Districts, nesting by harlequin ducks has been documented on Sullivan Creek, Outlet Creek (below Sullivan Lake Dam), and lower Harvey Creek. Streams in the LeClerc Creek Range Allotment have been extensively surveyed for fish habitats, and most reaches have been electro-shocked. Harlequins have not been sighted during these field surveys. Several years ago two ducks were observed on the lower West Branch LeClerc Creek, outside the allotment. These birds were likely resting during the spring migration. Nesting by this species has never been documented on the allotment.

Lewis and Kraege (2003) stated “During their nesting season (April - June), adult harlequin ducks require fast flowing water with loafing sites (boulders) nearby. Streams usually have a substrate that ranges from cobble to boulder, with adjacent vegetated banks.” Harlequin nests are typically found in stream reaches that are more secluded (> 50 meters from roads and trails) and with mature or old growth forest cover. Nests are commonly concealed under low shrubs or in rock crevices.

Most stream reaches within the LeClerc Creek Grazing Allotment appear to be unsuitable for harlequin duck nesting due to one or more of the following reasons;

- they lie in close proximity to roads,
- streamside forest cover is immature,
- stream gradient is low (lower water velocity),
- stream size is too small,
- stream substrate tends to be more sandy or silty with few “loafing” boulders.

Isolated reaches of the West Branch LeClerc Creek (below Forest Road 1935) appear to have the only potential to provide suitable breeding habitat. Mature forest stands on these reaches typically have dense understories, lots of coarse woody debris, and are often on steep topography. There are

usually few or no palatable grasses growing on the forest floor. Livestock have very poor access to these reaches on the allotment, as shown by the absence of stock trails, droppings, or other sign.

Harlequin ducks feed on aquatic insects, crustaceans, mollusks, echinoderms, and small fishes. They can dive 3-5 feet into a stream in search of food (Bellrose 1980). This species winters on coastal waters.

3. Effects of the Grazing Alternatives - Potential harlequin duck breeding habitats on the allotment are well removed from preferred grazing areas for livestock. Livestock have poor access to these stream reaches. The risk of disturbance to an active nest or other direct impacts from grazing should be insignificant or discountable. Livestock trailing on stream banks or watering in streams could cause sediment to be suspended in the water column; locally impacting native invertebrate prey species. However, any suspended sediments attributed to livestock should settle out well before they reach stream segments that could provide potential breeding habitat.

4. Effects Determination - There are no records of harlequin ducks nesting on the allotment and potential habitat appears to be very limited. Livestock are not accessing stream reaches that appear suitable for breeding by harlequins. There should be no direct, indirect, or cumulative effects to harlequin ducks resulting from any of the proposed allotment management alternatives.

H. moose (CNF sensitive species)

1. Management Framework - The Forest Plan provides no specific direction for managing habitat for this species. The Inland Native Fish Strategy (USDA 1995) provides standards and guidelines for grazing management in riparian areas, as outlined in the previous section on harlequin ducks. These measures are intended to maintain or improve the condition of riparian habitats, including those that could be used by moose.

2. Existing Conditions - The Washington Department of Fish and Wildlife (WDFW) website (<http://wdfw.wa.gov/living/moose.html>) provides the following description of how the department manages moose populations.

“WDFW classifies moose as a game animal. A limited number of special, once-in-a-lifetime moose hunting permits are issued each year on a draw basis to hunters with valid licenses and tags. The season is open during October and November in five moose management units in northeast Washington.

Washington's moose population has been slowly growing since the first confirmed moose sighting was made in Pend Oreille County in the early 1950s. A study conducted in the early 1970s indicated a population of about 60 moose. The first moose hunting season in Washington was in 1977 with three permits in the Selkirk unit of Pend Oreille County. Increased moose sightings throughout the area and beyond suggested a growing population. In 1987 one moose hunting permit was allowed in the Mt. Spokane unit. By 1998 there were a total of 43 permits among five units, and by 2006 there were 100 permits over 10 units”.

Moose inhabit forest environments where lakes, marshes, and other wetlands provide them with aquatic vegetation and willows. They eat a wide variety of other plants including upland shrubs in early stages of regrowth. Forest clearings, including burned or logged areas, in 15-30 year old successional stages are heavily used (WDFW 1991). Home range size is about three to six square miles, although they may wander much further.

On the LeClerc Creek Range Allotment, upland shrubs and aquatic vegetation are not utilized by cattle to an appreciable extent. Livestock grazing along some of the low gradient stream segments (most notably on the Middle Branch of LeClerc Creek) appears to be suppressing the density and overall diversity of riparian shrubs. The Forest Service and Kalispel Tribe maintain several livestock exclosures in the allotment that protect some high quality riparian habitats. These include a roughly 15+ acre exclosure around a large wetland complex on White Man Creek.

3. Effects of the Grazing Alternatives

Alternative A (no change) - Livestock browsing would continue to limit regeneration, and reduce the density and diversity of riparian shrubs along certain stream segments. This would mainly occur on low to mid-elevation stream reaches where cows have good access. The Forest Service and Kalispel Tribe would continue to maintain existing riparian exclosures on the allotment.

Alternative B (no grazing) - Browsing of riparian shrubs and aspen by cattle would cease, leading to increases in regeneration and overall density of these hardwoods. This alternative has the greatest potential to improve browse at locally impacted sites, over time.

Alternatives C and D - Within areas dropped from the allotment (ex. Fourth of July Pasture), any impacts to riparian shrub habitats from livestock browsing should cease. The Forest Service would install new rangeland improvements (fencing, watering sites, etc.) to better distribute grazing pressure, and reduce livestock use of lowland riparian areas. We would continue to maintain existing riparian exclosures on the allotment.

With Alternative C, approximately 2.6 miles of the Middle Branch LeClerc Creek would be located outside the allotment. Riparian shrub cover along this stream segment is presently the most impacted by cattle on the allotment. If the new allotment boundary fencing along the west side of the creek is effective, riparian shrub cover should quickly improve on the excluded stream reaches. With Alternative D, this portion of the Middle Branch LeClerc Creek would remain within the allotment. The east side of the creek on NFS lands would be fenced and tied into the existing fencing on the west side of the creek. This action would create two separate riparian exclosures on those segments of creek in NFS Sections 16 and 20 (T. 36N, R. 44E). The creek segment in privately owned Section 21 would remain accessible to cows.

Adaptive Management - We would employ monitoring and adaptive management to ensure that that riparian shrub utilization does not exceed standards, and riparian condition is being maintained or trending upwards (see Appendix D).

Cumulative Effects - The LeClerc Grizzly Bear Management Unit (BMU) is large enough to support the home ranges of well over a dozen moose. The effects of grazing on moose habitats become stable or quantitatively / qualitatively irrelevant or inconsequential beyond the boundaries of this area. No other livestock are grazed in the LeClerc BMU besides those associated with the

LeClerc Creek Range Allotment. Appendix C lists the other forest management projects / uses presently underway or proposed in the BMU.

In the last two decades, timber sales on Stimson Lumber Company lands opened up many dense stands and improved growing conditions for existing shrubs and hardwoods utilized by moose. Many created openings persist to this day on Stimson lands. Over the same time frame there was one timber sale on NFS lands in the BMU; Whiteman Timber Sale. Harvest units associated with this sale have mostly regenerated to the point where they are no longer providing good browse for moose.

It is possible that livestock access to some riparian areas and aspen stands was improved due to past timber harvest and road construction. However, streams were given no-cut buffers with all timber sales on Stimson and NFS lands. In most cases, regenerating conifers and shrubs in timber harvest units reduced the permeability of these stands to livestock within roughly ten years. Dense plantations often became more effective barriers to cattle movement in the allotment than the forest stands they replaced.

Active or planned timber sales will create openings on almost 1,400 acres of forest stands in the BMU (see Appendix C). Any upland shrubs within these new openings will have improved access to sunlight, water, and soil nutrients. The plants should become more robust and palatable to moose within one or two growing seasons. Additional forage for moose could be provided on these sites for ten or more years following harvest. Improvements in forage production are likely to be best realized where prescribed burning is used to treat logging slash (mainly NFS lands). Livestock could spend more time foraging in openings created by logging, and less time in lowland riparian habitats. These effects would be additive to the improvements in livestock distribution we expect to occur with Alternative C, as described earlier. Riparian areas within timber sale units would receive no-cut buffers or selective harvest prescriptions, depending on the stream class and other site conditions.

In 2015 or 2016, the Forest Service is scheduled to complete a prescribed burn in the Fourth of July Creek area to improve elk forage habitat. This project would increase forage palatability and vigor on more than 200 acres of shrublands, dry parklands, and a homestead meadow. Browse production for moose should be enhanced where it exists on these sites; particularly in the open shrublands.

4. Effects Determination - Moose populations have been expanding in northeast Washington while livestock grazing continues to occur on the Forest. The Washington Department of Fish and Wildlife manages moose to maintain healthy, productive populations at sustainable harvest levels.

With Alternative B (no grazing), livestock utilization of riparian shrubs and aspen on the LeClerc Creek Range Allotment would cease, leading to local improvements in regeneration, and density and diversity of these plants. This alternative may beneficially impact moose. With Alternatives A (no change), C, and D, livestock would continue to utilize riparian shrubs and aspen to some extent, reducing available browse for moose. Given the local nature of these impacts, and the relatively abundant browse available to moose across the allotment, all of these alternatives should have only slight or questionable adverse impacts to moose. Based on these considerations, Alternatives A and C, and D may impact individual animals, but would not be likely to lead to a trend to federal listing or loss of viability of the species.

I. mountain goat (CNF sensitive species)

1. Management Framework - The Forest Plan provides no direction for managing habitat for this species. The best potential habitat on the ranger districts is located in the Salmo Priest Wilderness, or in Semi-primitive Non-motorized Recreation Areas such as the Abercrombie-Hooknose Roadless Area. Active forest management is not allowed in these areas. Motorized travel is prohibited. Thus, the habitat potential for goat populations in these areas is likely to remain unchanged into the foreseeable future.

2. Existing Conditions - Mountain goat habitat can be chiefly described as inaccessible, steep, rocky cliffs, pinnacles, ledges, and rock slides, with adjacent conifer stands and early successional plant communities (WDFW 1991). Winter range is on lower elevation, steep, rocky sites close to diverse forage and cover. East and southwest aspects with low snow accumulations are preferred. Dense conifer stands adjacent to these sites provide the animals with thermal cover at this time of year. Summer ranges tend to be much larger and are usually not a limiting factor. Escape terrain (rock-cliff habitats) is critical for predator avoidance at all times of the year.

A small, transplanted population of mountain goats persisted on Mount Linton in northern Pend Oreille County into the early 2000s. For unknown reasons, these animals abandoned the site and apparently dispersed out of the local area at that time. Around that time Jere Dennis, the previous LeClerc Range Allotment permittee, observed a pair of goats on Coyote Hill. There have been no reported mountain goat observations from the allotment since.

The only sites with any potential to support goat populations in the allotment are Coyote Hill and Molybdenite Ridge. These high elevation ridges are steep, rocky, relatively remote, and surrounded by dense conifer forest. Livestock do not appear to be able to access these high elevation ridge systems except for trailing up the Paupac Road (FR 1936) where it crosses a saddle near to Coyote Hill.

3. Effects of the Grazing Alternatives / Effects Determination - We are unaware of any record of a resident mountain goat population on the LeClerc Creek Range Allotment in historic times. Individual goats have not been sighted on the allotment for about ten years. The potential for overlap between the remote, broken, and rocky habitats used by mountain goats and those preferred by livestock should be insignificant or discountable. There should be no direct, indirect, or cumulative effects to mountain goats resulting from any of the proposed allotment management alternatives.

J. pygmy shrew (CNF sensitive species)

1. Management Framework - The Forest Plan provides no specific direction for managing habitat for this species. The Inland Native Fish Strategy (USDA 1995) provides standards and guidelines for grazing management in riparian areas, as described in the previous section on harlequin ducks. These measures are intended to maintain or improve the condition of riparian habitats, including those that could be used by pygmy shrews.

2. Existing Conditions - The habitat requirements of this species are poorly understood, but it appears to prefer grassy openings in boreal forests. Long (in WDFW 1991) stated “Dense ground vegetation and interspersed wet and dry soils may be important habitat elements”. This author found pygmy shrews in swamps and marshes in the spring and areas of dry soils in the summer. He thought the species might also be associated with “disturbed, seral habitats such as cutover forests, flooded areas, and cultivated lands”. Special habitat components include woody debris on the forest floor and underground burrows. This insectivore is mostly active at night.

Livestock have impacted some wetland habitats on the allotment through mechanical compaction of moist soils and trampling sedges and other riparian vegetation. A reduction in green vegetation can reduce insect prey availability, and make shrews more susceptible to predation. Livestock trailing in wetlands can cause changes to internal drainage patterns, dry out soils, and degrade water quality.

3. Effects of the Grazing Alternatives / Effects Determination - Livestock make little use of young, dense conifer stands that might be frequented by pygmy shrews. Cattle appear to have poor access to the higher elevation wetlands on the allotment, as evidenced by the lack of stock trails and droppings in these habitats. Cattle are unlikely to disturb larger down logs on the forest floor.

Perhaps the greatest potential for overlap between livestock and pygmy shrew use of the allotment would be within moist meadows and other small forest openings that are located adjacent to dense forest cover. There is some possibility that cows could crush shrews underfoot or collapse their underground burrows. See the previous section on great gray owls for a characterization of the effects of the grazing alternatives to meadow and wetland habitats that could be utilized by pygmy shrews. See the section on grizzly bears for a discussion of cumulative effects to these resources.

Based on this discussion, the alternatives as proposed may impact individual pygmy shrews, but would not be likely to lead to a trend to federal listing or loss of species viability.

K. red-tailed chipmunk (CNF sensitive species)

1. Management Framework - The Forest Plan provides no management direction for this species.

2. Existing Conditions - In Pend Oreille County, this chipmunk occurs in dense, mixed second-growth forests of lodgepole pine, western larch, Engelmann spruce, Douglas fir, grand fir, and aspen. It is most prevalent higher in the mountains in the moist Engelmann spruce and subalpine fir plant associations where stand understories are dense. It can be found in small, sunny openings where boulders and low brush are present, and around down logs and brush piles (Broadbanks, in Best 1993). Red-tailed chipmunks are more arboreal than yellow pine chipmunks, which they overlap in range. Standing trees are often used as nest sites by the former species, although they may also nest in burrows underground. Conifer seeds are a major food source, but forbs and flowers, fruit, and seeds of shrubs and herbs are also important (Broadbanks, in Best 1993). There are no known records of this species from the LeClerc Creek Range Allotment.

3. Effects of the Grazing Alternatives / Effects Determination - Continued livestock grazing should have no effect on red-tailed chipmunk den sites or denning activities.

Livestock make little to no use of most food staples utilized by red-tailed chipmunks. There could be some overlap in the forb species eaten by both cows and red-tailed chipmunks. However, owing to the density of trees and shrub cover in habitats preferred by red-tailed chipmunks, livestock use of these areas would likely be confined to well-used trails which connect to more open, productive grazing sites such as meadows. Livestock do not appear to substantially use higher elevation, subalpine fir / spruce stands on the allotment. These habitats are the most likely to support the highest concentrations of red-tailed chipmunks.

Due to the questionable potential for overlap between habitats and food resources used by red-tailed chipmunks and livestock on the allotment, the grazing alternatives as proposed should have no impact on this species.

L. white-headed woodpecker, Lewis's woodpecker (CNF sensitive species)

1. Management Framework - The Regional Forester's Forest Plan Amendment #2 Revised Interim Standards for Timber Sales on Eastside Forests (Lowe 1995) contains direction for the retention of all live trees and snags that are 21+ inches in diameter within stands proposed for harvest. Open, park-like stand conditions should be maintained where this condition occurred historically, and vegetation should be manipulated to "encourage the development and maintenance of large diameter, open canopy structure." This direction should benefit these two woodpeckers over time.

2. Existing Conditions - These woodpeckers require open, mature, dry site forests dominated by pines (especially ponderosa pine) for their survival (WDFW 1991, Mellen-McClean et al. 2013). Large trees should make up 40 - 70 percent of the overstory canopy. Lewis's woodpeckers are also associated with forested riversides with large cottonwoods and other hardwoods. Both species use patches of burned forest.

White-headed woodpeckers typically nest in large, moderately decayed snags (Mellen-McClean et al. 2013). White-headed woodpeckers forage on insects in large (24+ inch) snags and on pine seeds in the winter. Landscapes that have a mosaic of open habitat for nesting and more closed canopied stands for foraging seem preferred by white-headed woodpeckers (Mellen-McClean et al. 2013). White-headed woodpeckers are uncommon visitors to the CNF. A year-round population exists on the Little Pend Oreille National Wildlife Refuge, more than eight miles southwest of the LeClerc Creek Range Allotment. We have no observation records of either woodpecker from the allotment.

Scattered, large ponderosa pines are remnant components of many stands on the allotment. However, few acres of mature, park-like stands dominated by ponderosa pines exist in the area. There are a few micro-patches of recently burned forest, associated with under-burning in timber harvest units, or shrubfield burning for big game habitat improvement. Riverine riparian forests do not exist on the allotment. Large cottonwood trees exist only as scattered individuals or small groves associated with streams and other riparian areas. The habitat capability of the allotment for these two woodpeckers is likely marginal at best.

3. Effects of the Grazing Alternatives / Effects Determination - The suitability of forest habitats for Lewis's and white-headed woodpeckers appears to be marginal across the allotment. Large live

and dead trees that could provide potential nesting, perching, roosting, and foraging habitats for these woodpeckers would not be affected by grazing cattle. Stumps and large down logs that provide alternate foraging sites would not be affected. Cottonwoods are rare on the allotment and cattle appear to be having insignificant or discountable affects to cottonwood reproduction. Thus, the alternatives as proposed would have no impact to Lewis's or white-headed woodpeckers.

M. North American wolverine (CNF sensitive species)

1. Management Framework - The Forest Plan provides no specific direction for managing wolverine habitat. Suitable habitat is probably "best defined in terms of adequate food supplies in large, sparsely inhabited wilderness areas" (Kelsall, in Ruggiero et al. 1994). Forest Plan direction for managing the Salmo-Priest Wilderness and other roadless land allocations could potentially benefit wolverines. The provision of seclusion habitat for grizzly bears in the Selkirk Mountains Grizzly Bear Recovery Area could also benefit wolverines.

2. Existing Conditions - A few documented sightings of wolverines exist from the Newport-Sullivan Lake Ranger Districts, mainly from remote, high elevation areas. In late winter of 2013, we contracted with a private biologist to survey for potential wolverine sign and active dens on major ridge systems on the ranger districts. He detected no tracks or other sign during the two flights he conducted (Layser 2013). There are no known sighting records of wolverines from the LeClerc Range Allotment.

Estimated home ranges for adult wolverines in North America are huge; up to 900 square kilometers for males and 100 square kilometers for each of two breeding females in one Montana study (Ruggiero et al. 1994). The maintenance of wolverine populations appears to be closely tied to providing for large, protected areas with limited human activity (Hornocker and Hash 1981).

Wolverines are extremely rare in northeast Washington, but they may find suitable habitat in the high country of the CNF. Recently conducted research found that wolverines restrict themselves to higher elevation habitats where spring snow cover persists until May, even when they are dispersing (Parks 2009). They will skirt around warm, dry valleys to remain in cooler conditions at high elevations. Large areas of medium or scattered mature timber and ecotonal areas associated with cliffs, rock slides, swamps, and meadows appear to be particularly important to this animal.

Molybdenite Ridge, at the northern boundary of the allotment, could potentially provide suitable habitats for wolverines. This long ridge system supports a mosaic of higher elevation subalpine fir / lodgepole pine stands and mountain meadows, interspersed with rock outcrops and talus. Livestock appear to have poor or no access to this area, owing to large expanses of dense forest stands and steep topography that separate it from the bulk of the allotment (personal comm. with C. Bolyard).

Food Resources - Wolverine are opportunistic omnivores that consume a wide variety of foods. Carrion (especially big game animals) serves as the mainstay of their diet, particularly in winter. Small mammals such as ground squirrels, porcupines, snowshoe hares, and birds are primary prey only when carrion of larger animals is unavailable (Banci, in Ruggiero et al. 1994). Surplus food is often cached for later use. In late summer and fall, berry crops may be important to wolverines.

The allotment contains both summer and winter ranges for deer, elk, and moose. Forest grouse and a diversity of small mammal species are also present. Discrete berry-producing shrubfields exist mainly at mid-upper elevations in the allotment; particularly within natural openings on the south side of Molybdenite Ridge. Berry-producing shrubs are often present in the understories of more open-canopied forest stands in the allotment. Huckleberry shrubs are the most common.

Den Habitat - Wolverines construct their dens in the cavities of hollow trees and logs, under the roots of upturned trees, or among boulders and rock ledges (Ruggiero et al. 1994). Females appear to prefer high-elevation, north-facing talus slopes, for natal denning (Heinmeyer et al. 2001). Dens are often located in glacial cirque basins.

In 2007 we used a geographic information system (GIS) to map potential natal den habitat on the ranger districts based on the model developed by Heinmeyer et al. (2001). The selection criteria we used included:

- northerly aspects (320 to 130 degrees) where snow cover persists the longest,
- elevations above 5500 feet,
- concave and flat slopes,
- rock and / or herbaceous cover types present,
- patch size at least six hectares (14.5 acres).

Using the above criteria, we mapped 4 potential den areas for wolverines on the north and northwest sides of Molybdenite Ridge, adjacent to, but outside the LeClerc Range Allotment. We did not map potential den areas on the south face of the ridge (inside the allotment), since snow cover is unlikely to persist later in the season on those exposures.

Seclusion - Wolverines are most susceptible to being disturbed and displaced by human activities during the winter; particularly snowmobile riding in areas with active dens. Open roads in wolverine habitats may facilitate poaching, and the incidental trapping of non-game species such as wolverines.

3. Effects of the Grazing Alternatives

Effects to Prey Habitats - Cattle have poor access to higher ridge systems in the allotment due to intervening stands of dense timber and steep topography. We have not documented any sites within the subalpine fir / spruce biophysical zone where cattle are over-utilizing green forage resources important to big game and other wolverine prey species. With Alternatives C and D, most high elevation areas (including Molybdenite Ridge) would be dropped from the allotment. See the earlier section on gray wolves for a more detailed discussion of grazing effects to big game habitats. See the section on lynx for a discussion of effects to snowshoe hare habitats. Livestock make only incidental use of native berry crops that could be consumed by wolverines.

Effects to Den Sites - There are no known active wolverine dens on the allotment, or anywhere on the Colville National Forest. The best potential den habitat in the area would be on the sheltered (northerly) aspects of Molybdenite Ridge, just outside the allotment. Den activities would occur outside of the period when cattle are present on the allotment. Thus, continued livestock grazing should have no impacts to denning wolverines or potential natal den habitats.

Effects to Seclusion - The range permittee does not require access on restricted roads in the higher elevation portions of the allotment. The potential for wolverines to be disturbed and displaced by livestock or human activities associated with allotment management should be insignificant or discountable.

Cumulative Effects - See the cumulative effects discussion related to big game habitats, in the previous section on gray wolves.

4. Effects Determination - The alternatives as proposed should have no effect to denning or seclusion habitats for wolverines. Effects to big game animals would be similar to those reported in the previous section on gray wolves. Thus, the alternatives as proposed may impact individual wolverines, but would not be likely to lead to a trend to federal listing or loss of viability of the species.

N. invertebrates (CNF sensitive species)

1. Management Framework - The Forest Plan provides no specific management direction for these species.

2. Existing Conditions - The habitat requirements of all the sensitive invertebrates listed for the CNF are poorly understood. Table 3 contains a description of habitats thought to be important to these creatures. In 2011 and 2012 the CNF contracted with an etymologist to survey potentially suitable habitats for the butterfly species. He found numerous specimens of Rosner's hairstreak butterflies in the areas he surveyed. As a consequence, this species may be removed from the sensitive list for the Forest in the future. In 2010 an inter-agency survey effort for multiple species in the Selkirk Mountains detected magnum mantleslugs on two surveys plots in Washington and 12 in Idaho (Lucid et al. 2010). This species was thought to be extirpated from Idaho. Fir pinwheels are currently considered imperiled in Idaho. However, the survey detected fir pinwheels at 37 percent of the survey plots in both Idaho and Washington (212 total individuals). To date, none of the other sensitive invertebrate species have been documented on the ranger districts.

All of the sensitive butterflies tend to be associated with sunny forest openings such as meadows, forb fields, wetlands, power line cuts, and roadsides. They do not necessarily need pristine habitats, and are more likely limited by the availability of food plants. Adults visit flowers such as oxeye daisy, clovers, and dandelions. Larval foods tend to be specific to the species. Cedar hairstreaks are strongly associated with western redcedar trees growing on the edges of openings. Adults of this species lay their eggs on new cedar needles and cedar foliage is the primary larval food plant. Peck's skipper larvae make their nests deep in the grass, at or near ground level.

The LeClerc Creek Range Allotment contains some old homesteads and mill sites (ex. Hanlon and Fourth of July meadows) that are now grassy meadows and key grazable areas for livestock. These sites, and the more open conifer or aspen stands could provide habitats for meadow fritillaries. Openings and edges in stands having a western red cedar component could provide habitats for Rosner's hairstreak butterflies.

The sensitive dragonflies and damselflies listed for the Forest are all associated with high elevation wetlands such as bogs, fens, and ponds. Bunchgrass Meadows is the only site where two of these species have been found on the Forest. Bunchgrass Meadows is a large, sedge filled fen located on the northeast edge (outside) of the allotment. Field review of this wetland, and other high elevation wetlands on the allotment found that livestock do not appear to be accessing these sites. This is probably due to their relative isolation within large patches of dense, high elevation forest.

Dense fir or cedar stands and areas of rock talus and outcrops in the allotment could provide habitat for fir pinwheels. The undersides of down logs and other woody debris could be utilized by the sensitive gastropods (snail and slug species). Magnum mantleslugs appear to be tied to subalpine fir plant associations at higher elevations.

3. Effects of the Grazing Alternatives / Effects Determination - Livestock make little use of dense conifer stands with closed canopies. They do not use talus or other rock features. They are unlikely to disturb larger down logs on the forest floor. Cattle have poor access to higher elevation wetlands and subalpine fir / spruce forests in the allotment. Livestock make only incidental use of western redcedar foliage. Therefore, the alternatives as proposed should have slight or questionable impacts to the sensitive gastropods, dragonflies, damselflies, and to Rosner's hairstreak butterflies.

Livestock may utilize the same plants required by many of the sensitive butterfly species, and may remove or degrade ground cover required by their larvae. Livestock may also crush or ingest invertebrates in sedentary life stages. However, grazing tends to maintain the vigor of grass plants over time and retards forest succession in meadows and other openings on the allotment. Thus, continued grazing can maintain the forest openings required by these species, over time. See the previous section on grizzly bears for a discussion of the effects of the grazing alternatives to meadow and wetland habitats utilized by the sensitive butterflies.

VIII. SUMMARY OF EFFECTS TO TES SPECIES

The following tables display the effects determinations of the allotment management alternatives for each TES species, and a brief summary of the rationale for each determination.

Table 17: LeClerc Creek Range Allotment - summary of effects to threatened and endangered species

T&E species	Alt.	Effects determination	Rationale for determination
Canada lynx (threatened)	A (no change)	May affect, not likely to adversely affect	Inadequate controls of livestock movements would continue to result in re-grazing of preferred sites. Continuing small scale reductions in biomass, vigor of green forage utilized by snowshoe hares, mainly in local streamside riparian areas.
	B (no grazing)	May beneficially affect	Any effects from livestock grazing to green forage used by snowshoe hares would cease.
	C and D (modified grazing)	May affect, not likely to adversely affect	Fewer acres of lynx range included within the new allotment boundaries. Better distribution of livestock from the present condition due to new range improvements (ex. fencing). If monitoring discloses that standards for green forage and riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend. This should lead to improvements in low cover and available green forage for snowshoe hares.
grizzly bear (threatened)	A	May affect, not likely to adversely affect	Inadequate controls of livestock movements would continue to result in re-grazing of preferred sites. Hiding cover and green forage biomass / vigor would continue to be suppressed on local riparian sites where there is concentrated livestock use. Grazing would tend to retard forest succession and maintain meadows in an open, productive condition. Required mitigation for dealing with sick and injured livestock and livestock carcasses intended to reduce the risk of livestock depredations.
	B	May beneficially affect	Recovery of green forage and hiding cover values on local riparian sites receiving concentrated cattle use. Improvements in meadow conditions (percent bare ground, green forage) over the short term. In the absence of grazing, active maintenance of meadows required to rejuvenate grasses and remove encroaching conifers. Meadow maintenance would occur subject to available funding. No livestock / grizzly bear conflicts.
	C and D	May affect, not likely to adversely affect	Livestock turned on to the allotment two weeks later in the spring. This would reduce competition for green forage and the risk of disturbance to grizzlies during the critical spring period following den emergence. Better distribution of livestock due to new range improvements. If standards for green forage and riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend. This should lead to improvements in hiding cover and available green forage at locally impacted riparian areas. Required mitigation for dealing with sick and injured livestock and livestock carcasses.
woodland caribou (endangered)	A	May affect, not likely to adversely affect	Some potential for overlap in the utilization of green forage plants by both livestock and cattle. Cattle appear to have poor access to most of the high elevation summer and fall caribou ranges. We have not documented over-utilization of green forage by livestock on caribou ranges.
	B	May beneficially affect	No potential overlap in use of green forage plants important to livestock / caribou.
	C and D	May affect, not likely to adversely affect	Fewer acres of the Molybdenite Caribou Management Unit included within the new allotment boundaries. At least 750 fewer acres of suitable (target) timber stands in the spring and summer seasonal zones for caribou. Livestock turned on to the allotment two weeks later in the spring. Thus, green forage utilization in caribou habitat and the risk of disturbance to caribou would be reduced in both time and space.

Table 18: LeClerc Creek Range Allotment - summary of effects to sensitive species

Sensitive species	Alt.	Effects determination	Rationale for determination
bald eagle	All	No impact	No known active or historic nests on the allotment. No impacts to large trees or potential forage base from continued grazing.
gray wolf	A (no change)	Not likely to cause a trend to federal listing	Required mitigation for dealing with sick and injured livestock and livestock carcasses. This could reduce the potential for wolves to associate domestic stock with food. Inadequate pasture controls would continue to result in re-grazing of preferred meadows and riparian habitats (big game foraging / parturition habitats). This could lead to a reduction in cover and forage biomass, making the sites less suitable for wolf prey species. Conversely, livestock grazing would tend to retard forest succession and maintain meadows in an open, productive condition for big game.
	B (no grazing)	May beneficially impact	No need for wolf control actions related to livestock depredations. Improvements in cover and forage values for big game in meadows, and riparian habitats. In the absence of grazing, active meadow maintenance required to rejuvenate grasses and remove encroaching conifers. Meadow maintenance projects would occur subject to available funding.
	C and D	Not likely to cause a trend to federal listing	Required mitigation for dealing with sick and injured livestock and livestock carcasses. Better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This could lead to improved habitat suitability for wolf prey species. Periodic maintenance of meadows required; particularly those that are no longer grazed.
great gray owl, pygmy shrew	A	Not likely to cause a trend to federal listing	Inadequate controls of livestock movements would continue to result in re-grazing of preferred meadows and other openings (owl foraging habitats). This could lead to a reduction in low cover and forage biomass, making the sites less suitable for small mammal prey species. Conversely, livestock grazing would tend to retard forest succession and maintain meadows in an open, productive condition.
	B		Short term improvements in low cover and forage for small mammal populations in meadows and wetlands. In the absence of grazing, active meadow maintenance required to rejuvenate grasses and remove encroaching conifers. Meadow maintenance projects would occur subject to available funding.
	C and D		Better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This could lead to improved habitat suitability for small mammal prey species. Fourth of July Meadow dropped from the allotment. This is perhaps the best quality foraging site for great gray owls on the allotment. Periodic maintenance of meadows required; particularly those that are no longer grazed.
harlequin duck	All	No impact	Low habitat suitability on the allotment. Potential nesting habitat on the West Branch LeClerc Creek appears to be inaccessible to livestock.

moose	A	Not likely to cause a trend to federal listing	Livestock would continue to utilize riparian shrubs and aspen, reducing browse for moose to some extent. These impacts would continue to be site-specific in nature. There is relatively abundant browse for moose available across the allotment. Moose are increasing in northeast WA in concert with continued livestock grazing across the Forest.
	B	May beneficially impact	Riparian shrub and hardwood tree utilization by livestock would cease on the allotment.
	C and D	Not likely to cause a trend to federal listing	Better distribution of livestock due to new range improvements, and adaptive management based on permanent monitoring sites. This should lead to improvements in riparian browse density, diversity, and regeneration over time. With allotment boundary changes, acreage of riparian shrublands and wetlands accessible to cows reduced.
mountain goat	All	No impact	Low habitat suitability for this species on the allotment. Preferred habitats (steep terrain with rock features) essentially inaccessible to cattle.
red-tailed chipmunk	All	No impact	Livestock are making little use of dense, mixed forest habitats and subalpine fir / spruce stands. Insignificant or discountable impacts to overhead canopy or mature trees. No or questionable overlap in the forage base for livestock and red-tailed chipmunks.
Lewis's, white-headed woodpeckers	All	No impact	Low habitat suitability. Grazing would not impact essential habitats (large trees, burns, etc.) utilized by these species.
North American wolverine	A	Not likely to cause a trend to federal listing	Livestock appear to have poor access to the high-elevation habitats important to wolverines. Continuing local impacts to riparian foraging / parturition habitats for big game (primary source of carrion). Livestock grazing would tend to maintain meadows in an open, productive condition, benefitting elk and deer.
	B		Recovery of all local, well-used riparian sites and aspen, potentially benefitting prey animals. Short term improvements in meadow conditions (percent bare ground, green forage). However, active management required to rejuvenate grasses and keep meadows in an open condition over time.
	C and D		Most high elevation habitats removed from the allotment. Better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This should lead to improvements in foraging and parturition habitats for big game. Periodic meadow maintenance required; particularly on those site no longer accessible to livestock.
sensitive invertebrates	A, C, and D	Not likely to cause a trend to federal listing	Insignificant or discountable impacts to special habitats such as; high elevation wetlands, rock features, large woody debris, or western redcedar foliage. Some potential for livestock to crush or ingest individual invertebrates in sedentary life stages. Livestock grazing would tend to maintain grass vigor and keep meadows in an open, productive condition. With Alternatives C and D, better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This should lead to improvements in low cover for certain species. Periodic meadow maintenance required.
	B		Short term improvements in meadow conditions (percent bare ground, green forage). In the absence of grazing, active meadow maintenance required to rejuvenate grasses and remove encroaching conifers.

IX. MANAGEMENT INDICATOR SPECIES (MIS)

Rather than attempt to manage for each of the hundreds of wildlife species found on the CNF, the MIS approach singles out a few representative species for active management and conservation. Essential habitats provided for each indicator species would in turn support many other animals with similar habitat requirements. Indicator species listed for the CNF were selected for one or more of the following reasons;

- they are endangered or threatened with extinction,
- they are believed to be sensitive to the effects of forest management on a major biological community (such as old growth forests),
- they require specialized habitats that could be sensitive to forest management practices,
- they are species commonly hunted, fished, or trapped.

Standards and guidelines for indicator species habitat management are found on pages 4-38 to 4-42 of the Forest Plan. These required measures were intended to ensure that forest management activities would not lead to the loss of viability of MIS populations across the Forest.

New research conducted since the Forest Plan went into effect has greatly improved our knowledge of the habitat requirements of forest wildlife in the Pacific Northwest. This has led to several Forest Plan amendments which updated how we manage MIS habitats on the CNF, and other national forests in the region. The Inland Native Fish Strategy (USDA 1995) provided new direction for the management of riparian habitats to meet the needs of native fish. The Regional Forester's Forest Plan Amendment #2 (Lowe 1995) provided direction for the management of old growth associated species habitats, dead wood habitats, and northern goshawk habitat, in timber sale areas.

Youkey (2012) completed a comprehensive assessment of the status of MIS on the Colville National Forest. This assessment contains species-specific information including; general distribution, Washington State distribution, detailed habitat descriptions, home range sizes, threats / risk factors, conservation status, population trends, habitat modeling, and viability assessments for each MIS across the Forest.

The following table displays information for the MIS listed for the CNF. This report will address the predicted effects of the project to those species with potential habitat in the LeClerc Creek Range Allotment (shaded blocks).

Table 19: LeClerc Creek Range Allotment - habitats for MIS and landbirds
(species in shaded blocks are addressed in this section)

MIS Species	Habitat present?	Documented in the area?	Representative habitats (USDA 1988)	Habitat modeling / other comments (Youkey 2012, USDA 1988)
grizzly bear (<i>Ursus arctos</i>)	yes	yes	“seclusion” habitat within the recovery area	Acres of core habitat (lands lying further than 500 meters from open or restricted roads) Total and open road densities
woodland caribou (<i>Rangifer tarandus</i>)	yes	yes	mature and old growth stands in cedar / hemlock and subalpine fir / spruce cover types within the recovery area	The overall quantity of habitat within the recovery area is not currently considered to be limiting to caribou.
Rocky Mtn. elk (<i>Cervus canadensis</i>) deer (<i>Odocoileus spp.</i>)	yes	yes	low elevation winter ranges	Approximately 201,527 acres of the Forest is designated big game winter range. Habitat objective is to provide a 50:50 cover to forage ratio with no point further than 600 feet from forested cover.
trout (<i>Mykiss spp.</i>)	yes	yes	Addressed in the fisheries section of this document.	
beaver (<i>Castor canadensis</i>)	yes	yes	aquatic, riparian habitats, aspen and willows	Approximately 177,118 acres of habitat is well distributed across the Forest.
northern bog lemming (<i>Synaptomys borealis</i>)	yes	yes	high elevation bogs	In Pend Oreille County, this species is only known to occur in Bunchgrass Meadows, a large boreal fen located just outside the northeast corner of the range allotment.
primary cavity excavators	yes	yes	standing dead trees (snags)	Ponderosa pine, western larch, quaking aspen, and paper birch are the favored trees species in many localities (Bull et al. 1997). Large diameter snags are preferred for nesting / roosting. Densities of these trees have declined from historic levels across the Forest.
pine marten (<i>Martes americana</i>)	yes	yes	mature and old-growth mesic conifer habitat, and down trees at moderate to high elevations	Approximately 12,252 acres of habitat is well distributed on only a portion of the Forest. Declines in source habitats from historic levels have been extensive in the region.
barred owl (<i>Strix varia</i>)	yes	yes	lower elevation mature and old-growth forest	Approximately 93,081 acres of habitat is well distributed across the Forest.
pileated woodpecker (<i>Dryocopus pileatus</i>)	yes	yes	mature and old-growth forest in Douglas fir or cedar / hemlock cover types, and large snags and logs	Approximately 93,081 acres of habitat distributed across the Forest. Populations and source habitat are likely less abundant than historic conditions. Densities of large diameter snags have declined from historic levels across the Forest.

*LeClerc Creek Range Allotment
Biological Assessment*

northern three-toed woodpecker (<i>Picoides tridactylus</i>)	yes	yes	mature lodgepole pine and subalpine fir forest stands	Approximately 518,864 acres of habitat distributed across the Colville National Forest. Populations and habitat are widely distributed, but highly dispersed with areas exhibiting lower abundance.
dusky (blue) grouse (<i>Dendragapus obscurus</i>)	yes	yes	winter habitat - mature trees along ridgetops, nesting habitat - open forest with grass/shrub understory at lower elevations	Approximately 36,145 acres of winter habitat and 78,264 acres of summer nesting / brooding habitat distributed across the Forest. Suitable habitats are broadly distributed and abundant, but there are gaps of low habitat abundance in some areas.
Franklin's grouse (<i>Dendragapus. canadensis</i>)	yes	yes	young lodgepole pine stands with interspersed mature spruce	Approximately 604,187 acres of habitat distributed across the Forest. Suitable habitats are broadly distributed and abundant, but there are gaps of low habitat abundance in some areas.
large raptors and great blue heron	yes	yes	bald eagles, herons – larger trees along larger lakes, rivers and wetlands northern goshawk - forest mosaic-all forest communities-medium and large tree family group	Approximately 3,099 acres of bald eagle and heron habitats distributed across the Forest. Late successional riparian forests reduced from historic conditions. Human activities have reduced the effectiveness of source habitats. Approximately 139,340 acres of goshawk habitat distributed across the Forest. There has been a reduction in source habitat and large diameter trees from historic conditions.
waterfowl	yes	yes	lakes, ponds, rivers, marshes and wetlands	Waterfowl were not designated as a MIS. However, the Forest Plan (page 4-40) requires that we maintain and enhance waterfowl habitats.

X. EFFECTS OF THE GRAZING ALTERNATIVES TO MIS

The methods I used to analyze the effects of the proposed allotment management alternatives to MIS habitats and populations included:

- review of data collected during field reconnaissance,
- review of timber stand examination data,
- aerial photo interpretation,
- spatial analysis using a geographic information system (GIS).

Effects to the representative habitats identified in the Forest Plan for grizzly bears (seclusion) and caribou (mature and old mesic forests) are described previously in this report. See the gray wolf section of this report for a discussion of effects to big game winter ranges.

A. beaver

1. Management Framework - The Forest Plan (Appendix F-3) states, “Beaver impoundments support a variety of furbearers, waterfowl, aquatic, and riparian dependent wildlife as well as fish. The impoundment of spring runoff helps to protect against flooding and erosion and holds moisture later into the year. The beavers’ damming of culverts and spillways of dams makes it a nuisance in some areas, but its value to wildlife and other forest resources make it an important animal for which to manage”.

Forest Plan direction is to maintain or enhance beaver habitat. The Inland Native Fish Strategy (USDA 1995) provides the following standards and guidelines for grazing management in riparian areas.

- Standard and guideline GM-1: Modify grazing practices (e.g. accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices is not effective in meeting Riparian Management Objectives.
- Standard and guideline GM-3: Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish.

These measures are intended to maintain or improve the condition of riparian habitats, including those that could be used by beavers.

2. Existing Conditions - Evidence of beaver activity exists on the larger creeks in the allotment. Beavers are a keystone species that alter the aquatic and riparian ecosystems they inhabit (Naiman et al. 1986). Beavers occupy permanent sources of water of almost any type. They prefer low gradient streams (which they modify), ponds, and small mud-bottomed lakes with dam-able outlets (McComb et al. 1990). They may also occupy deep sections of streams and lakes or ponds without constructing a dam. They require water deep enough to not freeze to the bottom in winter and allow for the accumulation of a substantial food pile beneath the ice. Beavers are associated with deciduous tree and shrub communities which are their primary source of food.

Deciduous trees are uncommon to rare on the LeClerc Creek Range Allotment, and mainly occur as trace components of conifer stands. Quaking aspen and paper birch are sun-loving, relatively short-lived trees (typically less than 100 years). They are maintained on the landscape by moderately frequent disturbances such as wildfires. Starting in the first half of the 20th century, new fire starts have been actively suppressed across the Forest. As a result, conifers have steadily encroached into most stands of deciduous trees. Annual browsing by livestock on aspen sprouts is keeping the young trees from growing beyond a couple feet tall in some locations on the allotment. This is mainly occurring where cows have easy access to existing aspen clones, such as on the edges of key grazable areas. If sprouts aren't allowed to grow out of reach of browsing animals, the overstory trees of these stands will not be replaced when they die over time.

Willows, alder, and other riparian shrubs are well browsed by livestock on certain local stream segments such as the lower portions of the Middle Branch LeClerc Creek. This late-season browsing is reducing the density and diversity of existing plants and suppressing regeneration on these sites. These impacts to forage resources and cover may be reducing habitat quality for beavers on the affected stream reaches.

3. Effects of the Grazing Alternatives

Alternative A (no change) - Cattle distribution across the allotment would remain less than optimal, with animals tending to concentrate in lowlands and streamside riparian areas. Riparian shrubs would continue to be well-utilized along certain stream reaches. Forage in upland areas would continue to be under-utilized by cattle. Some cows would continue to drift between pastures, potentially re-grazing plants in preferred areas. Stock would also continue to drift off the allotment, due to the lack of adequate fencing and other control structures.

At selected locations, the Forest Service would utilize fencing, piled slash, or other means to protect aspen sprouts that are being suppressed by constant browsing pressure. Young, encroaching conifers would be cut out within and around these clones in order to increase light levels for the hardwoods. Over the course of several years protected aspen sprouts should release, ensuring continuation of the clones. If the protected stands are located near streams, beavers could benefit from these restoration projects.

Alternative B (no grazing) - Direct effects from cattle grazing, trampling or trailing in riparian habitats that currently occur on an annual basis would cease. Browsing of riparian shrubs by cattle would cease. Riparian vegetation would become more dense and diverse over time. Forage resources and hiding cover for beavers would be enhanced on these sites. Regeneration in aspen clones that was suppressed by browsing cattle should recover over several years. Of the four alternatives, Alternative B would result in the greatest improvements in the vigor, productivity, and diversity of deciduous shrubs and trees across the allotment.

Alternatives C and D - With Alternative C, the allotment would be reduced in size by approximately 2,774 acres. It would include approximately 100 fewer acres of riparian forest, 40 fewer acres of riparian shrubs, and 93 fewer acres of wetlands, from the existing condition. With Alternative D, the allotment would be increased in size by approximately 2,453 acres. It would include approximately 28 additional acres of riparian forest, but there would be 8 fewer acres of riparian shrubs, and 43 fewer acres of wetlands, compared to the existing condition. Provided that

the new allotment boundaries are effective, livestock utilization of deciduous trees and shrubs should cease in riparian habitats that are removed from the allotment.

With both alternatives C and D, new cattle guards, fencing, and other control structures would be strategically placed on pasture boundaries in order to better control livestock drift. As a result, cattle should not have the opportunity to freely move across the allotment and concentrate on preferred sites for extended periods, as is presently the case. New watering sites would be installed in the Lower Bunchgrass Pasture. These structures should serve to pull cattle away from streamside riparian areas and better distribute them across the pasture.

At selected locations within the allotment, the Forest Service would protect aspen sprouts that are being suppressed by livestock browsing as described under Alternative A.

Adaptive Management - The Forest Service would monitor key riparian habitats in the allotment to assess vegetation utilization and trends. If riparian shrub utilization exceeds the standards proposed in the monitoring and adaptive management plan (Appendix D), we would take management actions to reverse this trend. These could include additional pasture controls, additional riparian exclosures on the most impacted sites, shortening the grazing period in a given pasture, etc. The long-term effects should be improvements in the vigor, density, and diversity of riparian shrub habitats.

Cumulative effects - The total acreage of deciduous tree and shrub habitats on the LeClerc Creek Range Allotment is a fraction of one percent of the Forest-wide habitat acres. The potential effects of livestock browsing on deciduous shrubs and trees on the allotment would be cumulative to those occurring on the other allotments across the Forest. Browsing pressure from wild ungulates can also locally impact these beaver food plants. Dispersed recreation can remove or degrade deciduous plant cover on over-used sites. Decades of active fire suppression across the Forest has favored the growth of conifer trees which are over-topping and shading out the light-loving hardwoods in many locations.

Alternatives C and D would include new range improvements and a monitoring and adaptive management plan for the LeClerc Creek Range Allotment. As the management plans for the other active range allotments on the Forest are updated, we are including similar provisions. In part, these measures are intended to avoid, minimize, or mitigate any adverse effects to riparian woodlands and shrublands resulting from permitted livestock grazing on the Forest.

Ongoing or future timber harvest on the Forest would reduce conifer cover, while maintaining most hardwood trees on the landscape. In recent years the Forest Service has been increasingly using prescribed burns to reduce forest fuel levels and return fire to the landscape. Timber harvest and prescribed burning could potentially release / rejuvenate on-site hardwood trees.

The Forest Service and cooperators continue to complete many projects intended to maintain or enhance riparian habitats across the Forest. These projects include; relocating roads out of stream corridors, replacing culverts to restore fish passage, constructing livestock exclosures to protect stream banks and riparian vegetation, and installing large wood in stream channels. The projects are normally intended to benefit native fish populations. However, they can mutually improve habitat conditions for beavers.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcome for beavers is "A / B" on the Colville National Forest (see Appendix B). Beaver populations and habitat are widely distributed and abundant on the Forest, but there are a few gaps and / or areas of low abundance. There is opportunity for subpopulations to interact across most of the Forest. The Washington Department of Fish and Wildlife manages beavers to maintain healthy, productive populations at sustainable harvest levels.

Given these considerations and the previous effects discussion, we expect the allotment management alternatives as proposed would not affect the viability of beaver populations on the Forest. Alternatives C and D (modified grazing) should initiate an upward trend in locally impacted deciduous tree and shrub habitats, from the present condition. Alternative B (no grazing) would result in the greatest long-term improvements in hardwood tree regeneration and riparian habitat values across the allotment.

B. northern bog lemming

1. Management Framework - The Inland Native Fish Strategy (USDA 1995) provides standards and guidelines for grazing management in riparian areas, as stated in the previous section on beavers. These measures are intended to maintain or improve the condition of riparian habitats, including those that could be used by northern bog lemmings.

2. Existing Conditions - Northern bog lemmings are limited to the cold, wet bogs or grass / forb meadows within or on the edges of the boreal coniferous forest, from western Alaska to eastern Labrador and Quebec, barely extending into northern Washington, Idaho, Montana, Minnesota, Maine, and New Hampshire (Groves and Yenson 1989, Reichel and Beckstrom 1994, Sallabanks et al. 2001, NatureServe 2012). Very little is known about the ecological relationships of this species (Johnson and Cassidy 1997).

Bog lemmings are found in sphagnum bogs, wet meadows, moist mixed and coniferous forests; alpine sedge meadows, krummholz spruce-fir forest with dense herbaceous and mossy understory, and mossy stream sides (Clough and Albright 1987, Groves and Yenson 1989, Reichel and Beckstrom 1994, Sallabanks et al. 2001). They maintain a home range of probably less than one acre (NatureServe 2012). Population densities may range up to three dozen per acre. They are very sociable, and may be found in small colonies. This species has been documented in Bunchgrass Meadows, a Research Natural Area (RNA) located on the far northeast corner of the LeClerc Creek Range Allotment (Layser and Burke 1973). Bunchgrass Meadows is a high elevation boreal bog thought to be a remnant of the last ice age. Approximately 22 acres of the RNA are located within the allotment; all of which are on upland sites. Bog lemmings have not been found elsewhere on the allotment.

Cattle generally have poor access to higher elevations areas on the allotment, due to intervening stands of dense timber and steep topography. We have not documented livestock in Bunchgrass Meadows for more than 20 years. We have not documented cattle use of any other potentially suitable, high elevation wetlands on the allotment.

3. Effects of the Grazing Alternatives

Alternative A (no change), C, D - Livestock grazing in high elevation wet meadows and adjacent habitats could remove food resources and low cover required by bog lemmings. Livestock trailing in these wetlands could compact the hydric soils, alter wetland drainage patterns, and collapse the under-ground burrows of bog lemmings.

The potential for livestock to access high elevation habitats suitable for northern bog lemmings would continue to be slight or questionable. If cattle begin to use Forest Road 1935 to drift up towards Bunchgrass Meadows and out of the allotment, we would install a cattle guard in the road and wing fencing to block this drift.

Alternative B (no grazing) - There would be no potential for livestock to impact habitats for northern bog lemmings.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcome for the northern bog lemming is "D / E" on the Colville National Forest (see Appendix B). "Suitable environments are highly isolated and exist at very low abundance, with little or no possibility of population interactions among suitable environmental patches, resulting in strong potential for extirpations within some of the patches, and little likelihood of re-colonization of such patches. These species occupies a rare habitat at the edge of its continental range, but occur at higher densities than many species, so local populations are more likely to persist than species that occur at lower densities in small areas" (Youkey 2012). Given the lack of livestock use of known or potential habitat on or adjacent to the allotment, we expect that the alternatives as proposed would have no effect on the continued viability of northern bog lemming populations across the Forest.

C. primary cavity excavators, three-toed woodpecker

1. Management Framework - The Forest Plan as amended by Lowe (1995) requires that sufficient snag habitat be retained within timber harvest units to support 100 percent of the potential population of primary cavity excavators throughout the rotation cycle. Minimum down log levels within harvest units are displayed in the following table.

Table 20: Forest Plan (as amended by Lowe 1995) down log requirements

Species	Pieces per acre	Diameter (small end)	Piece length & total linear length	
ponderosa pine	3-6	12 inches	> 6 feet	20-40 feet
mixed conifer	15-20	12 inches	> 6 feet	100-140 feet
lodgepole pine	15-20	8 inches	> 8 feet	120-160 feet

In 2003, the Forest Service released "DecAid", an internet-based tool developed to assist land managers in evaluating the effects of forest management on wildlife species that use dead wood habitats (Mellen et al. 2003). DecAid provides forest inventory data for dead wood habitats on the

national forests of Oregon and Washington. It is a tool that synthesizes published literature, research data, wildlife databases, and expert judgment and experience.

2. Existing Conditions - Primary cavity excavators create holes in snags or defective live trees each year to serve as nest or roost sites. Many other wildlife species use the older, abandoned cavities for shelter or reproduction. Standing dead and defective live trees, rotting stumps, and down logs attract the insects upon which primary excavators feed. Larger trees and down logs are of higher value because they are used by more species of woodpeckers for roosting, foraging and nesting (Bull et al. 1997). These authors stated “when retaining snags for cavity nesters, ponderosa pine, western larch, quaking aspen, and paper birch are the favored species in many localities.” The following table displays the bird species in the primary cavity excavator group and their general habitat requirements.

Table 21: Primary cavity excavator habitat requirements (from Youkey 2012)

Species	Primary snag species used	Habitat description
white-headed, Lewis' woodpeckers	ponderosa pine, aspen, grand fir	These species are discussed earlier in this report.
pileated woodpecker	Large diameter trees	This species is discussed separately in the MIS section of this report.
three-toed woodpecker	lodgepole pine, aspen, Douglas fir, western larch Engelmann spruce	Subalpine fir / Engelmann spruce stands, and lodgepole pine or lodgepole pine / mixed conifer stands at minimum elevations of 4,500 feet are important to this species (Marshall 1992). In one study in central Oregon, this woodpecker only excavated cavities in lodgepole pine with heart rot (Coggin et al. 1987). This study also disclosed a selection for mature and over-mature stands, and against younger stands and logged areas.
black-backed woodpecker (<i>Picoides articus</i>)	ponderosa pine, western larch, lodgepole pine, Douglas-fir,	Old-forest stages of subalpine, montane, lodgepole, lower montane, and riparian forests. Positively associated with higher densities of small (9-15" dbh) trees and snags. Nesting habitat includes mature and old trees infested with disease or heart-rot, or dead trees in the early stages of decay. This species requires conditions that produce abundant bark and wood-boring beetles. It reaches its highest densities in un-salvaged, recently burned (1-5 years) forest with high densities of snags. Older burns do not support adequate levels of wood-boring beetles.
downy woodpecker (<i>Picoides pubescens</i>)	cottonwood, aspen	Deciduous riparian woodlands and lowland deciduous forest (alder, cottonwood, willow, aspen, oaks). Also found in urban parks and orchards. Low to mid-elevations. Nests primarily in dead trees.
hairy woodpecker (<i>Picoides villosus</i>)	ponderosa pine, aspen, Douglas-fir, lodgepole pine	Dry and wet coniferous forests at low to mid-elevations. Also use deciduous forest and riparian areas, especially if adjacent to coniferous forest. Use all ages of forest stands, though some authors report preference for older stands for nesting. Nests primarily in moderately decayed snags. These woodpeckers reach their highest densities in un-salvaged, recent (1-5 years) post-fire habitat with moderate to high densities of snags.
northern flicker (<i>Colaptes auratus</i>)	ponderosa pine, Douglas fir, western larch	Habitat generalists, though most common in open forests or forest edges. Use coniferous and deciduous forests, riparian woodlands, and urban areas. Nests are in large snags. Highest densities in un-salvaged burned areas 5 or more years post-fire.

red-naped sapsucker (<i>Sphyrapicus nuchalis</i>)	aspen, western larch, lodgepole pine, Douglas fir	Riparian habitats, especially aspen, cottonwoods, alders and pine. Less abundant in mixed conifer forest. Typically nest in conifer snags or live aspen with heart-rot.
Williamson's sapsucker (<i>Sphyrapicus thyroideus</i>)	aspen, Douglas fir, ponderosa pine, western larch	Source habitat is open, late-seral stages of montane and lower montane forest (Douglas-fir, western larch, grand fir and white fir, and ponderosa pine) as well as aspen and cottonwood stands.

There is scant evidence that livestock are causing any direct impacts to dead or defective trees on the allotment. Cows sometimes mechanically damage young conifer trees, particularly within and on the edges of key grazing areas. These effects are of such small scale that they are not influencing the long-term development of mature conifer stands, and by extension, future dead tree habitat (pers. comm. with P. Haas 2013).

Deciduous trees provide quality nesting and foraging habitats for many primary cavity excavators. These trees are uncommon to rare on the LeClerc Creek Range Allotment, and mainly occur as trace components of conifer stands. Quaking aspen and paper birch are sun-loving, relatively short-lived trees (typically less than 100 years). They are maintained on the landscape by moderately frequent disturbances such as wildfires. Starting in the first half of the 20th century, new fire starts have been actively suppressed across the Forest. As a result, conifers have steadily encroached into most stands of deciduous trees. As conifers grow in these stands they can over-top and shade the hardwood trees, eventually reducing the vigor of the mature hardwoods and suppressing the growth of young trees.

On the LeClerc Creek Range Allotment, annual browsing by livestock on aspen sprouts is keeping the young trees from growing beyond a couple feet tall in some locations. This is mainly occurring where cows have easy access to existing aspen clones, such as on the edges of old homestead meadows. If sprouts aren't allowed to grow out of reach of browsing animals, the overstory trees of these stands will not be replaced when they die. The supply of defective or dead deciduous trees could then be reduced on the affected sites over time.

3. Effects of the Grazing Alternatives

Alternative A (no change), C and D - Livestock grazing would continue to have no discernible impact on existing snags, defective live trees, stumps, or down logs. Continued grazing would not impair the development of future conifer tree cover on the allotment (pers. comm. with P. Haas).

Livestock would continue to browse the twigs, leaves and regeneration of hardwood trees, mostly impacting young trees growing at local sites near key grazing areas. At selected locations, the Forest Service would utilize fencing, piled slash, or other means to protect aspen sprouts that are being suppressed by constant browsing pressure. Young, encroaching conifers would be cut out within and around these clones in order to increase light levels for the hardwoods. Over the course of several years, protected aspen clones should respond with new sprouting from their root systems, ensuring continuation of the clones.

Alternative B (no grazing) - Livestock browsing on hardwood tree regeneration across the allotment would cease. Over time, sprouts that are not heavily browsed by wild ungulates could

recover and release. There should be sufficient regeneration to perpetuate hardwood stands, so long as growing conifers do not overtop and completely shade them out.

Cumulative Effects - The effects of livestock browsing of young deciduous trees on the allotment would be cumulative to those occurring on the other active range allotments across the Forest. Browsing pressure from wild ungulates can also locally impact hardwood tree regeneration. Timber harvest and mechanical site preparation can damage hardwood trees. Trees would necessarily be removed within new road / logging equipment corridors, and landings. The Forest Service is increasingly using prescribed fire to reduce forest fuel loading and mimic the effects of wildfires. Quaking aspen and paper birch trees are thin-barked, and the above-ground portions of these trees are likely to be killed if they are scorched in prescribed burn units.

On the other hand, forest management activities that reduce conifer cover could rejuvenate and maintain hardwood stands over the long term. Most hardwood trees would be retained on-site within timber harvest units. These trees should benefit from the reduced competition for sunlight, water, and soil nutrients, and the increase in solar radiation striking the forest floor. Aspen are likely to respond with vigorous new sprouting from their root systems. This would be especially true where timber harvest creates openings (ex. shelterwood harvest) and the sites are subsequently under-burned. Birch trees that are scorched are likely to sprout from their bases. Both species can seed in where mineral soil is exposed.

Timber harvest or prescribed burning could improve access for livestock in the treated areas. Cattle could then utilize newly sprouting hardwood stems in those areas. However, it has been our experience that these impacts tend to be local, and are swamped by the large “pulse” of hardwood stems potentially released by these forest management projects. Recently logged / burned areas that do not provide ample green forage tend to receive little use by livestock. Treatment areas on steeper or broken terrain also tend to be seldom used. Hardwoods growing in these areas should have a chance to release and grow into maturity. The Forest Service would continue to protect selected hardwood stands growing within range allotments with fencing or other means.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcomes for the primary cavity excavators ranges from an "A" to a "C" on the Colville National Forest (see Appendix B). Livestock grazing on this allotment would continue to have insignificant or discountable affects to the essential habitats of primary cavity excavators, with the exception of hardwood trees. Given the previous effects discussion, we expect the allotment management alternatives as proposed would not affect the viability of primary cavity excavator populations on the Forest. Alternatives C and D (modified grazing) should initiate an upward trend in locally impacted stands of deciduous trees, from the present condition. Alternative B (no grazing) would result in the greatest long-term improvements in hardwood tree recruitment across the allotment.

D. old growth associated MIS (barred owl, pileated woodpecker, pine marten)

1. Management Framework

Core Habitat Areas - The Forest Plan (pp. 4-39, 40, 4-69 through 4-72) provides for a network of “core habitat areas” to meet the reproductive needs of species associated with old growth forests. Core habitat areas are spaced more or less evenly across the Forest in a grid pattern. Management Area 1 (MA1) is a Forest Plan land allocation that is managed specifically for barred owls. Core habitat areas for pileated woodpeckers and pine marten do not have their own management area designation but are located across most other Forest Plan land allocations. Each habitat area is large enough to provide for the needs of one breeding female of its target species; 600 acres for barred owls, 300 acres for pileated woodpeckers, and 160 acres for pine marten. The distance between areas reflects the average dispersal distance for each species.

Forest Plan Amendment - Research results from the Interior Columbia Basin Ecosystem Management Project (Wisdom et al. 2000) indicated that existing Forest Plan management requirements “might not be adequate to ensure long-term species viability”. To address this issue, the regional forester (FS Region 6) issued an amendment to the forest plans of the national forests east of the Cascade Mountains in Washington and Oregon (Lowe 1995). This amendment provided additional direction for managing old growth associated species habitat, as follows.

Habitat Connectivity - Forested corridors may be necessary for animals such as pine marten to move across a managed forest landscape and make full use of available blocks of habitat. At least two corridors must be maintained between neighboring core habitat areas and late and old structural stage stands. These corridors must be at least 400 feet wide. Medium or larger diameter trees in these areas should be common, and canopy closure should be within the top third of site potential. If stands meeting these criteria are not available, the next best stands should be used for connections.

Large Tree Habitat - All remnant late and old seral trees (ponderosa pine, Douglas fir, western larch) and / or structural live trees that are 21+ inches in diameter must be retained within stands proposed for timber harvest.

Late and Old Structural Stage (LOS) Stands - We must manage individual watersheds for their historic range of variability (HRV) for stand structural stages. For example, if late and old structural stage stands covered 10-20 percent of a given watershed historically, we would manage to provide that level of late and old stands over time. Generally, most watersheds on the Forest are below HRV for late and old structural stage stands. In those watersheds, we would maintain all the existing late and old stands, and attempt to move younger stands towards that condition through stocking control (thinning or other means).

Dead Tree Habitats - See the management direction for these habitats in the section on primary cavity excavators, earlier in this report.

2. Existing Conditions - The rectangular foraging excavations of pileated woodpeckers are present in many of the larger standing dead trees (snags) on the allotment. No active pileated nests are known from the area. No barred owl nests are known from the area. However, both species are observed on occasion and we suspect that nesting by both birds may be occurring. In recent years

we have documented pine marten tracks in the snow crossing Forest Road (FR) 1935 in the Saucon Creek area, and FR 1936 in the Coyote Hill area.

All three of these MIS can utilize the low to mid-elevation, mesic (wet) habitat types found on the allotment. Pileated woodpeckers and barred owls can utilize the warm, dry, Douglas fir / shrub habitats present in the area. Pine marten make little to no use of dry forest types and those with a lack of structure near the ground (Ruggiero et al. 1994). In various sites in the Northern Rocky Mountains, martens apparently prefer stands dominated by mesic subalpine fir, Douglas fir and lodgepole pine in the subalpine fir / spruce plant associations (Burnett 1991, Fager 1991, in Ruggiero et al. 1994). Martens prefer riparian habitats throughout their range (Buskirk et al. 1989, Anthony et al. 2003, Baldwin and Bender 2008) and habitats near water (Bull et al. 2005).

Large diameter (21+ inch) live and dead trees provide foraging, resting, and reproductive sites for these three MIS. Log piles provide pine marten with access points to spaces underneath the snow, where they hunt small mammals (Ruggiero et al. 1994). By definition, late and old structural stage stands support the highest densities of large trees and down logs. In the late 1920s / early 1930s, stand-replacing wildfires swept through a large percentage of the LeClerc Creek Watershed. As a result, late and old forest stands are presently rare and unevenly distributed across the allotment.

Cattle tend to move through the allotment along roads or well-used trails from one preferred grazing area (meadow or other forest opening) to the next. Timber stands with higher tree stocking levels, complex stand understories, and coarse woody debris tend to act as effective natural barriers. Normally, there is little green forage available on the well-shaded forest floor of these stands. Harris (1954) found that cattle seldom use stands with dense over-story canopies except during conditions of extreme heat or intense insect harassment. For these reasons, livestock use of stands suitable for the old growth associated MIS is mostly confined to movements along a few traditional trails. This is also the case with the MIS core habitat areas across the allotment.



Figure 7. Timber stands with higher tree stocking levels, complex stand understories, and coarse woody debris tend to act as effective natural barriers to cattle movement.

There are no discernible impacts from livestock grazing to existing large live or dead trees, logs, stumps, rootwads, or other structures utilized by these MIS, anywhere on the allotment. Cows have sometimes mechanically damaged young conifer trees (5 years or less) in plantations. This typically occurs where the topography is flat, and the plantation is located adjacent to a travel way or meadow. In the worst such cases this can affect the number of planted trees that survive the first five years. However, with the in-growth of volunteer trees, cattle are not impairing the ability of plantations to become fully stocked or grow into mature stands over time (pers. comm. with P. Haas 2013).

In some locations, livestock are over-browsing the regeneration of hardwood trees, as was described earlier in the sections on beavers and primary cavity excavators. This could be limiting the development of large diameter hardwoods on the affected sites. Livestock trailing, trampling, and browsing is suppressing the growth of riparian shrubs along certain, lower elevation stream reaches. This has the effect of reducing horizontal cover, and potentially impacting the suitability of the stream corridors as habitat and natural travel-ways for pine marten. Marten are most likely to inhabit the subalpine fir biophysical zone in the mid to upper elevations of the allotment. Stream reaches in these areas tend to be steep, incised, and / or densely vegetated, and often inaccessible to livestock.

3. Effects of the Grazing Alternatives

Alternatives A (no change) C and D- Cattle use of late and old stands and core habitat areas for these MIS would continue to be mostly restricted to a few traditional trails, and should have insignificant or discountable impacts to wildlife habitat values in these stands. Livestock grazing would continue to have no discernible impacts to existing large live trees, snags, stumps, down logs, root wads or other structures important to old growth associated MIS. Cumulative effects to these habitat components would not be expected.

Continued grazing could suppress the development of large deciduous trees, particularly within proximity to meadows and other key grazing areas. Continued grazing could reduce concealing cover on certain stream reaches, potentially reducing the suitability of the streams as habitat and natural travel-ways for pine marten. See the previous section on beavers for a description of direct, indirect, and cumulative effects to riparian shrub habitats from these alternatives. See the previous section on primary cavity excavators for a description of effects to deciduous trees from these alternatives.

Alternative B (no grazing) - There would be no impacts to large live trees, snags, down logs, or other structures that provide essential habitats for old growth associated MIS. Direct effects from cattle browsing, trampling or trailing in riparian habitats that currently occur on an annual basis would cease. Riparian vegetation on the affected sites would become more dense and diverse over time. This could provide more vegetative complexity and concealing cover for pine marten using the stream corridors. The ability of dispersing marten to avoid detection by predators could be enhanced on these sites. Livestock browsing of young hardwood trees would cease, potentially leading to increased numbers of large diameter trees over time.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcomes for the three old growth associated MIS are "A" for barred owls, "C" for pileated woodpeckers, and "B / C" for pine marten (see Appendix B).

At the Forest-wide scale, the grazing alternatives as proposed would not result in gaps in available forested habitats that would tend to isolate populations of these MIS. At the forest patch scale, the grazing alternatives would have no discernible impacts to stands of mature and old forest, or to designated core habitat areas for the species. At the within-stand scale, there would be no discernible impacts to existing large live trees, snags, logs, root wads, or other structures. With Alternatives A, C, and D, there would be continuing, local impacts to mature hardwood tree recruitment, and to streamside riparian plant cover and complexity. Direct, indirect, and cumulative effects to these habitats are detailed under the previous sections on beavers and primary cavity excavators. Based on these considerations, we expect that the grazing alternatives as proposed would not affect the continued viability of old growth associated MIS populations on the Forest.

E. dusky (blue) grouse

1. Management Framework - Direction for dusky grouse habitat management in the Forest Plan (page 4-40) includes maintaining at least 50 percent of the vegetated edge around each spring or water source as hiding cover. There should be no break in this cover that exceeds 600 feet along

the water's edge. In addition, within open stands along ridgetops, mature, limby, subalpine fir or Douglas fir trees should be maintained at a rate of eight trees per acre to serve as winter roosts. Dusky grouse is a game species in Washington State.

2. Existing Conditions - Forage plants used by this grouse include balsamroot, buckwheat, dwarf mistletoe, dandelion, strawberry, clover, sedge, bearberry, huckleberry, lupine, and others (Rodrick et al. 1991). Their winter diet consists mainly of fir needles. Livestock graze on sedges and forbs across the allotment, but do not appear to utilize dwarf mistletoe, ericaceous shrubs, huckleberry, and fir needles to an appreciable degree.

Dusky grouse are closely associated with streams, springs and meadows (Rodrick et al. 1991). Streams are the most prevalent perennial water sources on the LeClerc Creek Range Allotment. Livestock trailing, trampling, and grazing is impacting sedges and forbs along certain, lower elevation stream reaches; particularly on the Middle Branch LeClerc Creek. Concealing cover has been reduced on some of the most heavily-used sites.

Conifer thickets, their edges, and adjacent clearings provide quality breeding and brood rearing habitats for dusky grouse (Ware 2003). Meadows on the allotment are mostly the remnants of cleared, old homestead or mill sites. They are often located adjacent to major streams (ex. Hanlon, Fourth of July meadows). The edges of these meadows might provide suitable spring and summer habitats for dusky grouse. Presently, open, park-like forest stands that could provide brood habitat are uncommon to rare on the allotment.

Noxious weeds exist in all of the grazable areas of the allotment. These exotic plants are usually not very palatable to wildlife, and can successfully out-compete native forage plants for sunlight, water, and soil nutrients. Weed seeds can be transported overland on the hair of livestock, and deposited in their feces. It is possible that cattle are bringing in weed seeds from off-Forest. They also may be spreading seeds from place to place within the allotment. The CNF has an active program of spraying herbicides to kill noxious weeds in meadows, on roadsides, and on other areas of the allotment. In recent years, these treatments have led to marked reductions in weed coverage and improvements in the vigor of native grasses and forbs in sites like Fourth of July Meadow.

In the fall, dusky grouse migrate to high elevation slopes where they will spend the winter. They seek out mature, dense-canopied, and limby Douglas fir or subalpine fir trees for roosting. Preferred roost trees are typically in open, park-like groves growing along high ridgetops (Perkins, Lindzey, and Gessaman 1991). On the LeClerc Creek Range Allotment, subalpine fir / spruce and mixed conifer stands on high ridges provide the most suitable potential roost habitat. Livestock grazing on the allotment is having no discernible effect on suitable roost trees.

3. Effects of the Grazing Alternatives

Alternative A (no change) - Livestock grazing would continue to have no discernable impacts to suitable winter roost trees or winter forage (fir needles) utilized by dusky grouse.

Cattle distribution across the allotment would remain less than optimal, with animals tending to concentrate in lowlands and streamside riparian areas. Sedges and forbs would continue to be well-utilized along certain stream reaches. Livestock browsing on riparian shrubs and other vegetation would continue to suppress hiding cover on these sites to some extent.

Forbs would continue to be utilized by cattle on the edges of meadows and other openings that could provide brood rearing habitats for dusky grouse. Some cows would continue to drift between pastures, potentially re-grazing plants in preferred areas. Stock would also continue to drift off the allotment, due to the lack of adequate fencing and other control structures. As described in the section on great gray owls, livestock grazing would tend to maintain meadows in an open, productive condition over time.

The risk of livestock transporting noxious weed seeds onto and across the allotment would remain unchanged. The Forest Service would continue to monitor and control weed infestations in the area, as is standard practice.

Alternative B (no grazing) - Direct effects from cattle grazing, trampling or trailing in riparian habitats that currently occur on an annual basis would cease. The biomass of sedges and forbs could increase over time on those sites where concentrated use is occurring. Hiding cover would improve over time as riparian shrubs and other plants increase in density and diversity.

As described in the previous section on gray wolves, the vigor of green vegetation in meadows would likely improve for the first few years in the absence of grazing. Over time, meadows are likely to accumulate excess amounts of dead grass leaves. The vigor of the meadow plants may be compromised and the meadows may become less productive and healthy. Young conifer trees would likely accelerate their encroachment into meadows. Of the three project alternatives, the need to actively manage meadows to keep them in an open condition would be greatest with Alternative B. Livestock would no longer be a vector in the spread of noxious weeds in the area.

Alternatives C and D - Livestock grazing would continue to have no discernable impacts to winter roost trees or to winter forage utilized by dusky grouse.

With both alternatives C and D, new cattle guards, fencing, and other control structures would be strategically placed on pasture boundaries in order to better control livestock drift. As a result, cattle should not have the opportunity to freely move across the allotment and concentrate on meadows and other preferred sites for extended periods, as is presently the case. Four new livestock watering sites would be installed in the Lower Bunchgrass Pasture. These water troughs should serve to pull cattle away from streamside riparian areas and better distribute them across the pasture. Over time, there could be a decreased incidence of bare ground in areas of presently concentrated livestock use, leading to a reduced potential for noxious weed spread.

Adaptive Management - The Forest Service would regularly monitor forage utilization on key meadows, and riparian shrub utilization and stream bank alteration at selected sites. If utilization exceeds the standards proposed in the monitoring and adaptive management plan (Appendix D), the CNF would take management actions to reverse this trend. These could include additional pasture controls, shortening the grazing period in a given pasture, or reducing the numbers of cow / calf pairs authorized for the allotment. Thus, these alternatives should initiate long-term improvements in the condition of meadows and riparian habitats that could be utilized by dusky grouse.

Cumulative effects - The potential for livestock grazing on the LeClerc Creek Range Allotment to spread noxious weeds would be cumulative to any uses / activities that expose soils or transport

weed seeds across the Forest. These include other livestock operations, vegetation management projects, dispersed recreation, and vehicle traffic on forest roads. To minimize this potential, we would continue to incorporate preventative measures into forest management projects such as washing vehicles and equipment. We would continue our annual program of monitoring and treating weed infestations on roadsides, meadows, and other locations. These actions have proven to be effective in controlling and reducing weed populations in many areas of the Forest. Noxious weeds are likely to increase on private and state lands over time, due to the apparent lack of commitment to prevention, treatment, and monitoring on those ownerships.

Livestock would continue to utilize forbs preferred by dusky grouse, particularly within meadows and other key grazing areas. These effects would be cumulative to those occurring on other active range allotments. However, livestock grazing would tend to retard forest succession and maintain meadows in an open, productive condition over time. Timber sales on NFS lands would be designed to reduce tree stocking and increase the percentage of park-like stands, particularly within dry forest types. As a rule these stands are below historic levels across the Forest. They could provide suitable brood habitats for dusky grouse. In addition, we would continue to complete habitat improvement projects designed to maintain old homestead meadows through burning, the periodic removal of encroaching young conifers, or other means.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcome for dusky grouse is "B" on the Colville National Forest (see Appendix B). Suitable habitats are broadly distributed and abundant on the Forest, but there are gaps where habitats are absent or in low abundance. Habitat patches are large enough and close enough to allow the species to potentially interact as a meta-population. Dusky grouse are likely well-distributed across most of the Forest. The Washington Department of Fish and Wildlife manages dusky grouse to maintain healthy, productive populations at sustainable harvest levels. Given these considerations, and the predicted effects described earlier, we expect the alternatives as proposed would not impact the viability of dusky grouse populations on the Forest.

F. spruce grouse (Franklin's subspecies)

1. Management Framework - The CNF selected spruce grouse as an MIS to be an indicator of young lodgepole pine stands with interspersed mature spruce. Forest Plan direction (page 4-40) for spruce grouse habitat management is concerned with providing young age class lodgepole pine stands in an un-thinned condition. Spruce grouse is a game species in Washington State.

2. Existing Conditions - In the Northern Rocky Mountains, spruce grouse inhabit the cold, dry or mesic, subalpine fir / shrub biophysical zone. The highest densities of this bird are found in young to mid-successional forest stands where lodgepole pine is at least present, if not dominant (Williamson et al. 2008). These forests tend to be mesic, and have an understory of shrubs, herbs, and / or young fir or spruce trees. "Although lodgepole pine can be found in relatively arid forest types, these types do not appear to support large numbers of spruce grouse" (Williamson et al. 2008). Suitable spruce grouse habitat may be created in areas of past wildfires or in timber harvest units where most of the overstory trees have been removed, and the second growth is sufficiently dense.

Williamson et al. (2008) stated “Spruce grouse food staples include the buds, leaves, flowers, and berries of ericaceous plants and conifer needles.” They prefer to eat the foliage of short needled pines over spruce and fir.

On the LeClerc Creek Range Allotment, cattle appear to be making little use of densely stocked plantations or mid-successional stands that could provide suitable habitat for spruce grouse. This is particularly true in the higher elevation, subalpine fir / shrub biophysical zone, where spruce grouse are most abundant. Stocking surveys have not revealed problems with attaining fully stocked plantations anywhere in the allotment (personal comm. with P. Haas 2013). Conifer needles and other plant resources important to spruce grouse receive insignificant or discountable use by cattle.

3. Effects of the Grazing Alternatives - The dense nature of suitable spruce grouse stands and the typical lack of green forage on the forest floor would continue to preclude livestock use of these stands to an appreciable degree. The development of future spruce grouse stands in plantations should not be impaired by continued livestock grazing. Conifer needles and other plant resources important to spruce grouse would continue to receive insignificant or discountable use by cattle. Cumulative effects are not expected.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcome for spruce grouse is a "B" on the Colville National Forest (see Appendix B). Suitable habitats are broadly distributed and abundant on the Forest, but there are gaps where habitats are absent or in low abundance. Habitat patches are large enough and close enough to allow the species to potentially interact as a meta-population. The Washington Department of Fish and Wildlife manages this game bird to maintain healthy, productive populations at sustainable harvest levels. Given these considerations and the predicted effects described earlier, the alternatives as proposed would not impact the continued viability of spruce grouse populations on the Colville National Forest.

G. large raptors and great blue herons

1. Management Framework - The CNF selected this group of birds as MIS to be an indicator of large trees suitable for nesting. We must manage the individual nest trees and nest groves of these birds to ensure their continued usefulness to the species (Forest Plan page 4-40).

The Forest Plan as amended by Lowe (1995) provides for the protection of every known active and historically used (within five years) northern goshawk nest. Thirty acres of the most suitable habitat surrounding nests must be deferred from harvest. In addition, a 400-acre “post-fledging area” (PFA) must be established around known active nests. Timber harvest may occur within a PFA, provided that all stands having late and old stand structure are retained, and younger stands are enhanced towards late and old condition, if possible.

The Forest Plan as amended by the Inland Native Fish Strategy (USDA 1995), provides standards and guidelines for grazing management in riparian habitat conservation areas (RHCAs) as described in the previous section on beavers. These measures are intended to maintain or improve the condition of riparian habitats for inland native fish, and should work to protect the essential habitats of great blue herons.

Also see the previous section on old growth associated MIS, for a discussion of management direction for core habitat areas, large tree habitats, and late and old structural stage stands.

2. Existing Conditions - There is one known goshawk nest stand within the LeClerc Creek Range Allotment. This nest stand has been active in each of the last three years. Two other goshawk nest stands were active in recent years within the vicinity (but outside) of the allotment. There are no known recently active nests of any other large raptor species on the allotment, although there is a good possibility that nesting by barred owls and red-tailed hawks is occurring. There are no known heron rookeries or individual heron nests in the allotment.

The following table displays information for species in this MIS group, including general habitat preferences. Habitat requirements of these selected species are representative of those for all large raptors with potential to occur on the Forest.

Table 22: LeClerc Creek Range Allotment - large raptor, heron habitats

Bird species	Documented in area?	CNF nesting season	Preferred habitats
bald eagle (<i>Haliaeetus leucocephalus</i>)	yes	Jan. 1 - Aug. 15	Sensitive species addressed earlier in this report.
great gray owl (<i>Strix nebulosa</i>)	yes	Feb. 15 - July 15	
barred owl (<i>Strix varia</i>)	yes	Feb. 15 - July 15	MIS addressed earlier in this report.
northern goshawk (<i>Accipiter gentilis</i>)	yes, nesting confirmed	March 1 - Aug. 31	Goshawks select groves with high numbers of large trees for nesting. Preferred stands have good overhead canopy closure (more than 50 percent), but with open understories that allow easy flight. Gentle slopes (less than 40 percent) are typically selected for nesting. (Woodbridge and Hargis 2006). Goshawk prey items include mammals such as tree squirrels and snowshoe hares, and birds such as grouse, woodpeckers, and larger passerines.
red-tailed hawk (<i>Buteo jamaicensis</i>)	yes	March 1 - Aug. 31	This raptor uses a broad spectrum of habitats ranging from desert to agricultural lands to open forests. They require a mature tree within which to build a nest, and open foraging habitats (ex. meadows, fields, pastures, recently cut-over forest) with an abundant supply of rodents to hunt.
great blue heron (<i>Ardea herodias</i>)	yes	April 1 - Aug. 31	Great blue herons inhabit freshwater and brackish marshes, the shores of lakes, rivers, bays, lagoons, and ocean beaches, mangroves, fields, and meadows (NatureServe 2012). In eastern Washington, they are generally found at lower elevations in the ponderosa pine zone and riparian hardwood forests (Smith et al. 1997). Hérons commonly nest high in trees in swamps and forested areas, less commonly in bushes, on the ground, rock ledges, and coastal cliffs. They often nest colonially with other herons. Nests are generally sited close to foraging habitat. Great blue herons eat mostly fish, but also consume amphibians, invertebrates, reptiles, mammals, and birds (Vennesland and Butler 2011).

3. Effects of the Grazing Alternatives

All alternatives - Livestock grazing is not affecting live conifers or snags that could presently provide nest sites for large raptors or herons. There are no impacts to conifer tree canopy closure. Based on tree stocking surveys conducted in plantations across the allotment, livestock grazing does not appear to be having an appreciable impact on the establishment of young conifer trees (personal comm. with P. Haas 2013).

See the previous section on primary cavity excavators for a discussion of project impacts to deciduous trees (potential nesting habitat). See the previous section on beavers for a discussion of project impacts to streamside riparian areas (potential prey habitats). See the previous section on dusky grouse for a discussion of project impacts to meadows and parklands (potential prey habitats). See the section on landbirds later in this document for a discussion of impacts to avian prey.

4. Conclusion - Based on population trends, habitat assessment, and risk factors, the viability outcome for large raptors and great blue herons is "B / C" on the CNF (See Appendix B). Suitable habitats are broadly distributed, but there are gaps, and the total amount of habitat is limited for some species.

At the Forest-wide scale, the grazing alternatives as proposed would not create gaps in suitable habitat that would tend to isolate populations of large raptors or herons. At the forest patch scale, the grazing alternatives would have no discernible impacts to patches of late and old forest, or to groves of mature trees that could be used for nesting. At the within-stand scale, there would be no discernible impacts to existing large live trees, snags, overhead canopy closure, or other structures used by these MIS.

With Alternatives A, C, and D, there would be continuing impacts to mature hardwood tree recruitment (potential nest trees), and to streamside riparian plant cover and complexity (prey habitats) at some locations. Effects to these habitats are detailed under the previous sections on beavers and primary cavity excavators. Effects to meadows and park-like stands (prey habitats) are detailed under the previous section on dusky grouse. Based on these considerations, we expect that the grazing alternatives as proposed would not affect the continued viability of large raptor and great blue heron populations on the Forest.

H. waterfowl

1. Management Framework - Waterfowl were not designated as MIS under the Forest Plan. However, the Forest Plan (page 4-40) requires that we maintain and attempt to enhance waterfowl habitats.

The Forest Plan as amended by the Inland Native Fish Strategy (USDA 1995), provides standards and guidelines for grazing management in riparian habitat conservation areas (RHCAs) as described in the previous section on beavers. These measures are intended to maintain or improve the condition of aquatic and riparian habitats for inland native fish, and should mutually benefit waterfowl.

2. Existing Conditions - Marshes, wet meadows, beaver ponds, natural ponds and lakes, rivers, and the uplands immediately adjacent to these areas serve as locally important staging, breeding, and migratory sites for waterfowl. Wetland and aquatic habitats larger than one acre receive the most use by breeding ducks, but smaller areas are also used. Larger wetland areas are needed to attract and hold molting birds and fall migrants.

Most waterfowl species nest on the ground in dense vegetation located adjacent to wetland and aquatic habitats. Some waterfowl species (ex. mallards) may nest in upland habitats that are hundreds of feet or more from a suitable, brood rearing water body. Other species (ex. wood ducks, hooded mergansers) nest in tree cavities located near water bodies. Riparian and emergent vegetation provides nest materials and concealing cover for waterfowl and their broods (Bellrose 1980).

Many duck species forage on emergent and aquatic plants. Other waterfowl predate amphibians, macro-invertebrates and small fish, which are dependent on these plants.

Within the LeClerc Creek Range Allotment, habitat for waterfowl is extremely limited. There are a few ponds, all of which are less than one acre in size. Most wetlands are forested, or scrub / shrub type habitats. Livestock access to forested wetlands tends to be restricted to discrete “nick points” on the wetland margins. On rare occasion, mallards, mergansers and other ducks are sighted on streams and ponds in the allotment. We have no records of any waterfowl species nesting on this allotment. Approximately one mile west of the allotment, the Pend Oreille River provides extensive and regionally important habitats for waterfowl and great blue herons.

Livestock utilize riparian vegetation associated with open wetlands on the allotment. Cattle sometimes churn up the sediments in shallow areas of ponds. They may also mechanically compact hydric wetland soils and crush emergent vegetation on the margins of ponds and wetlands (pers. comm. with J. Himenez 2014). These impacts tend to be local, and mainly occur where riparian habitats are located in proximity to key grazing areas, roads, or traditional stock trails.

3. Effects of the Grazing Alternatives - See the previous section on beavers for a discussion of project effects to streamside riparian habitats. See the previous section on primary cavity excavators for a discussion of project effects to snags and deciduous trees (potential nest sites for cavity nesting ducks).

Alternative A (no change) - Cattle distribution across the allotment would remain less than optimal, with animals tending to concentrate in lowlands and streamside riparian areas. Sedges and other vegetation would continue to be well-utilized on the edges of certain small wetlands and ponds. Concealing cover and green forage for waterfowl could be reduced on the affected sites.

Alternative B (no grazing) - Livestock use of waterfowl habitats would cease. Wetland plants would no longer be grazed and mechanically impacted by cattle trailing. Cover and forage values for waterfowl on the affected sites should quickly improve.

Alternatives C and D - With the proposed allotment boundary changes, there would be approximately 93 fewer acres of wetlands accessible to cattle with Alternative C, and 43 fewer

acres with Alternative D. New rangeland improvements (fencing, cattle guards, upland watering sites) would be employed to reduce cattle use of riparian areas and better distribute grazing pressure across the allotment.

Adaptive Management - The Forest Service would monitor key riparian habitats on the allotment to assess vegetation utilization and trends. If water quality, green forage utilization, or riparian shrub utilization exceed the standards proposed in the monitoring and adaptive management plan (Appendix D), we would take management actions to reverse this trend. These could include additional pasture controls, additional riparian exclosures on the most impacted sites, shortening the grazing period in a given pasture, etc. The long-term effects should be improvements in cover and green forage values for waterfowl on wetland habitats.

Cumulative effects - The potential effects of livestock trailing and foraging in wetland habitats on the allotment would be cumulative to those occurring on the other active range allotments on the Forest. As the management plans for each active range allotment on the CNF are updated, we are including provisions for new range infrastructure and monitoring / adaptive management regimes, similar to those described in this report. These measures are intended to minimize, mitigate, or avoid any adverse effects to riparian habitats from permitted livestock grazing on the Forest.

In recent years the CNF and cooperators have completed many projects intended to maintain or enhance riparian habitats across the Forest. These projects were mainly intended to mitigate the impacts of forest roads, past forest management, and livestock grazing on native fish populations. However, they have also improved habitat conditions for waterfowl and other wildlife. On the LeClerc Creek Range Allotment, such projects have included; relocating roads out of stream corridors, replacing culverts to restore fish passage, constructing livestock exclosures around riparian areas, and installing large wood in stream channels. See Appendix C for a list of projects completed and proposed in the watershed.

4. Conclusion - Small numbers of waterfowl are occasionally seen on wetlands and streams on the allotment. We have no record of successful nesting by any waterfowl species in the area. Suitable waterfowl habitats are restricted in number and total acreage on the allotment. Livestock grazing and trailing is impacting riparian vegetation and hydrologic function in some of the more open wetlands (pers. comm. with J. Himenez). In recent years, the Forest Service and other entities have completed many riparian habitat improvement projects on the allotment that were intended at least in part, to limit livestock access to streams and wetlands. For these reasons, we expect the project alternatives would not affect the viability of waterfowl populations on the Forest.

XI. SUMMARY OF EFFECTS TO MIS

Based on the discussion in the preceding section, the allotment management alternatives would be consistent with management direction in the Forest Plan (as amended) for MIS and waterfowl. The following table summarizes the effects to each species or species group, by alternative.

Table 23: LeClerc Creek Range Allotment - summary of effects to MIS

Species	Alternative	Summary of effects
grizzly bear	All	No impacts to core habitat or road densities from allotment management operations.
woodland caribou	All	Insignificant or discountable impacts to mature and old growth forest stands from livestock grazing.
elk and deer	All	Livestock grazing would continue to have insignificant or discountable impacts to forest cover on big game winter ranges. See the previous section on gray wolves for a discussion of potential impacts to forage resources on winter ranges.
beaver	A (no change)	Inadequate controls of livestock movements would continue to result in livestock loitering in riparian areas; particularly later in the season. Livestock would continue to browse riparian shrub and hardwood regeneration. This could retard the growth of these beaver food plants at local sites where there is concentrated use. Deciduous trees are uncommon on this allotment. Selected aspen stands protected with fencing or other means.
	B (no grazing)	Recovery of all deciduous shrubs and trees browsed by cattle over time, leading to improvements in local forage resources for beavers over time.
	C, D (modified grazing)	With Alt. C, the allotment would contain approximately 100 fewer acres of riparian forest, 40 fewer acres of riparian shrub habitats, 93 fewer acres of wetlands. With Alt. D, the allotment would contain approximately 28 additional acres of riparian forest, but 8 fewer acres of riparian shrubs and 43 fewer acres of wetlands. Better distribution of stock from the present condition due to new range improvements (fencing, cattle guards, upland watering sites). This should reduce the amount of time livestock spend in riparian lowlands. If standards for riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend. Selected aspen stands protected with fencing or other means.
northern bog lemming	A, C, and D	Bunchgrass Meadows is the only site known to support this species in the LeClerc Creek Watershed. Livestock have not accessed this wetland for more than 20 years. Livestock do not appear to be accessing other high elevation wetlands in the area.
	B	No potential for livestock to utilize suitable bog lemming habitats.
pine marten, barred owl, pileated woodpecker	A	Livestock grazing would continue to have insignificant or discountable impacts to existing large live trees, snags, down logs, root wads, overhead canopy closure. Livestock browsing of riparian shrubs would continue to reduce hiding cover on certain stream segments, decreasing their utility as travel corridors for pine marten. See the section on primary cavity excavators for a discussion on hardwood trees.
	B	Livestock browsing on hardwood tree regeneration and riparian shrubs would cease. Over time there would be more concealing cover within streamside riparian areas presently impacted by cattle. The ability of marten to use these natural travel / dispersal routes could improve.
	C and D	Livestock grazing would have insignificant or discountable impacts to existing large trees, snags, down logs, root wads, overhead canopy closure. Better distribution of livestock due to new range improvements and adaptive management tied to the condition of riparian vegetation. This should lead to improved hiding cover on impacted stream segments.

primary cavity excavators, three-toed woodpecker	A, C, and D	Livestock grazing would continue to have insignificant or discountable impacts to defective live trees, standing dead trees, stumps, or down logs. Livestock browsing of hardwood tree regeneration would continue to suppress the development of mature trees in some locations (i.e. near key grazing sites). Selected aspen stands protected with fencing or other means.
	B	All utilization of hardwood tree regeneration by livestock would cease. There would be a higher probability that mature trees could develop on the affected sites over time.
dusky (blue) grouse	A	Livestock grazing would not impact winter roost trees. Inadequate controls of livestock movements would continue to result in re-grazing of meadows and other preferred sites. However, grazing would tend to maintain these potential dusky grouse brood habitats in an open, productive condition. Livestock would continue to be a vector for noxious weed spread.
	B	In the absence of grazing, there would be short term improvements in meadow conditions (less bare ground, improved vigor of green forage). Periodic meadow maintenance would be required to rejuvenate grasses and remove encroaching conifers. Livestock would no longer be a factor in the spread of noxious weeds.
	C, D	No impacts to winter roost trees. Better distribution of livestock due to new range improvements. This should reduce the potential for key grazable areas to be re-grazed in the same year. If standards for green forage utilization and riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend. Somewhat reduced risk of noxious weed spread from the current condition.
Franklin's (spruce) grouse	All	Suitable habitat mostly too dense to be accessed by cattle. Livestock utilization of conifer needles and other plant resources important to spruce grouse is insignificant or discountable.
large raptors and herons	All	Insignificant or discountable impacts to suitable nest / perch trees or overhead canopy closure. See dusky grouse for a summary of effects to meadows and other openings (prey habitats for some raptors).
waterfowl	A	Suitable waterfowl habitats very limited on the allotment. Nesting by waterfowl has not been documented on the allotment. Livestock grazing would continue to reduce cover and forage resources on some local, open wetlands.
	B	No potential for livestock to impact suitable waterfowl habitats. Recovery of locally impacted sites.
	C and D	With Alt. C, wetland habitats on the allotment reduced by approximately 94 acres. With Alt. D wetlands on the allotment reduced by approximately 43 acres. Better distribution of stock from the present condition due to new range improvements (fencing, cattle guards, upland watering sites). This should reduce the amount of time livestock spend in riparian lowlands. If standards for riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend.

XII. LANDBIRDS

1. Management Framework - The USDI Fish and Wildlife Service (FWS) is the lead federal agency for managing and conserving migratory birds in the United States. However, under Executive Order (EO) 13186, all other federal agencies are charged with the conservation and protection of migratory birds. In brief, this order requires agencies to;

- Integrate bird conservation principles, measures, and practices into agency activities. Avoid or minimize adverse impacts on migratory bird resources when conducting agency actions.
- Ensure that environmental analyses evaluate the effects of agency actions on migratory birds, especially species of concern.
- Restore and enhance the habitat of migratory birds, as practicable.

In January 2001, the Forest Service (FS) and the FWS developed a Memorandum of Understanding (MOU) regarding the management of landbirds. The MOU expired on December 8, 2013, but has been extended until December 8, 2015. In general, the MOU directs the FS to;

- Consult the current FWS Birds of Conservation Concern, state lists, and comprehensive planning efforts for migratory birds, when developing the list of species to be considered in the planning process.
- Incorporate migratory bird habitat and population management objectives and recommendations into agency planning processes.
- Strive to protect, restore, enhance, and manage habitats of migratory birds, and prevent the further loss or degradation of habitats on National Forest System lands.

In December of 2008, the FWS released “The Birds of Conservation Concern Report” (USDI 2008) which identifies species, subspecies, and populations of migratory and non-migratory birds in need of conservation actions. While all the bird species included in this report are priorities for conservation action, the report itself makes no finding with regard to whether they warrant consideration for Endangered Species Act (ESA) listing. The goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions.

2. Existing Conditions

Birds of Conservation Concern - Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The LeClerc Creek Range Allotment is located in the Northern Rocky Mountains BCR (BCR 10). The following table displays the birds of conservation concern for this BCR. Effects of livestock grazing on bird species with suitable habitat in the allotment (shaded blocks in the table) will be addressed here.

Table 24: LeClerc Creek Range Allotment - migratory birds of conservation concern
(those species in shaded blocks are addressed in this report)

Bird species	Habitat Present?	Documented in the area?	Preferred habitats
bald eagle (<i>Haliaeetus leucocephalus</i>)	yes	yes	These species are addressed earlier in this report.
American peregrine falcon (<i>Falco peregrinus</i>)	no	no	
yellow-billed cuckoo (<i>Coccyzus americanus</i>)	no	no	
Lewis' woodpecker (<i>Melanerpes lewis</i>)	yes	no	
white-headed woodpecker (<i>Picoides albolarvatus</i>)	yes	no	
Swainson's hawk (<i>Buteo swainsoni</i>)	no	no	Open country including shrub steppe, prairies and irrigated farmland with high prey densities.
ferruginous hawk (<i>Buteo regalis</i>)	no	no	Habitats with low tree densities and topographic relief in sagebrush plains of the high desert and bunchgrass prairies.
upland sandpiper (<i>Bartramia longicauda</i>)	no	no	Found in Oregon only.
long-billed curlew (<i>Numenius americanus</i>)	no	no	Open grassland areas east of the Cascade Mountains. Found in small numbers in estuaries along the coast.
flamulated owl (<i>Otus flammeolus</i>)	yes	no	Associated with ponderosa pine forests and mixed conifer stands with a mean 67% canopy closure, open understory with dense patches of saplings or shrubs. Grassy openings for foraging.
black swift (<i>Cypseloides niger</i>)	yes	no	Nests on ledges or shallow caves in steep rock faces and canyons, usually near or behind waterfalls and sea caves. Forages over forests and open areas in montane habitats.
calliope hummingbird (<i>Stellula calliope</i>)	yes	yes	Open shrub / sapling seral stages (8-15 years), meadows, burned areas, and riparian thickets at higher elevations.
Williamson's sapsucker (<i>Sphyrapicus thryroideus</i>)	yes	yes	Mid to high elevation, mature open and mixed coniferous / deciduous forests. Snags are a critical component.
olive-sided flycatcher (<i>Contopus cooperi</i>)	yes	yes	Open conifer forests (< 40 % canopy cover) and edge habitats where standing snags and scattered tall trees remain after a disturbance.
willow flycatcher (<i>Empidonax trailii</i>)	yes	no	Associated with riparian shrub dominated habitats, especially brushy / willow thickets.
loggerhead shrike (<i>Lanius ludovicianus</i>)	yes	no	Inhabits grasslands, pastures with fence rows, agricultural fields, sagebrush with scattered juniper and open woodlands. Requires elevated perches throughout for hunting and nesting.
sage thrasher (<i>Oreoscoptes montanus</i>)	no	no	A sagebrush obligate dependent on large patches and expanses of sagebrush steppe and bitterbrush with shrub heights in the 30 -60 cm height. Prefers bare ground over grassy understories.
Brewer's sparrow (<i>Spizella breweri</i>)	no	no	A sagebrush obligate found in shrublands of contiguous big sagebrush, greasewood, rabbitbrush, and shadescale habitats.
sage sparrow (<i>Amphispiza belli</i>)	no	no	Associated with semi-open evenly spaced shrubs 1-2 m high in big sage up to 6,800 ft.
McCown's longspur (<i>Calcarius mccownii</i>)	no	no	Rare in OR & WA, prefers dry sparse prairies.
gray crowned rosy-finch (<i>Leucosticte tephrocotis</i>)	yes	no	Found above timberline among bare rock outcroppings, cirques, cliffs, and hanging snowfields.
Cassin's finch (<i>Carpodacus cassinii</i>)	yes	yes	Open, mature coniferous forests of lodgepole and ponderosa pine, aspen, alpine fir, grand fir and juniper steppe woodlands.

The following table displays conservation strategies for the priority landbird habitats found on the allotment, in relation to livestock grazing management (Altman 2000, 2012).

Table 25: LeClerc Creek Range Allotment - conservation strategies for landbird priority habitats related to livestock grazing

Bird species	Priority habitats	Conservation strategies
flamulated owl, Cassin's finch, calliope hummingbird, Williamson's sapsucker, olive-sided flycatcher	dry conifer forests, mixed mesic conifer forests, subalpine forests, snags, burned areas	Ensure adequate recruitment of young pines in dry forests. Eliminate or restrict livestock grazing that inhibits growth and recruitment of understory vegetation. Consider retiring allotments where habitat degradation is occurring and / or where cowbirds are common.
black swift, gray-crowned rosy finch	alpine areas, waterfalls, rock features including outcrops, cliffs, and canyons.	Eliminate or restrict livestock grazing in alpine habitats, especially those that have already been degraded.
Williamson's sapsucker, Cassin's finch	hardwood trees	Eliminate or modify livestock grazing to ensure succession and recruitment of young aspen.
willow flycatcher, calliope hummingbird, Cassin's finch	riparian areas	Remove livestock grazing from the riparian zone (ex. exclosures) in areas that have low recovery potential, are already badly degraded, or are critically important to bird populations. Limit grazing intensity to maintain native species composition and health (diverse understory, replacement hardwood trees). If possible, graze during vegetation dormancy (fall, winter, early spring). If possible, graze outside of the breeding season for landbirds (April 15 – August 1). Relocate or place new grazing infrastructure (ex. water troughs) > 0.25 mile from riparian habitat. Consider retiring allotments where riparian habitat degradation is occurring and / or where cowbirds are common.
calliope hummingbird, loggerhead shrike, flamulated owl	meadows, parklands	Eliminate or restrict livestock grazing in montane meadows, especially those that have already been degraded.

Brown-headed cowbirds - This species was originally restricted to the range of buffalo herds on the prairies of North America. Cowbirds are now widespread, owing to the favorable habitat conditions created by forest management, human settlement, and livestock grazing. Cowbirds do not raise their own young but lay a single egg in the nest of another species. The “foster” parents may become duped into raising the cowbird nestling as their own. Cowbird nestlings tend to develop

faster and are more aggressive than their nest mates. They often out-compete their nest mates for food delivered to the nest. Brood parasitic cowbirds now overlap with species that have not evolved mechanisms for distinguishing foreign eggs or nestlings from their own. Thus, cowbirds are a threat to many native bird populations in North America. Salt licks, corrals, and other livestock concentration areas may function as primary cowbird feeding sites (Robinson et al. 1995).

Cowbirds occur within the Pend Oreille River Valley, particularly associated with town sites and ranches. Cowbird populations appear to be largely absent from National Forest System lands on the allotment. This may be due to the predominantly continuous and dense nature of the forest stands present, the quick re-growth of vegetation following disturbances such as timber harvest or fire, and the scarcity of permanent forest openings.

3. Effects of the Grazing Alternatives

Effects to Active Nests - With Alternatives A (no change), C, and D (modified grazing), landbird nests could be at risk of being mechanically destroyed by cattle. These potential impacts to local bird populations would likely be of such small as to be insignificant or discountable, given the following considerations;

- Impacts would be mostly limited to ground nesting bird species.
- Ground nests are often placed against logs, under shrubs, or other protective cover.
- Impacts would be mostly limited to key grazing areas, open timber stands, stock travel-ways and on gentler slopes.
- Cattle would have access to only a portion of the allotment during the bulk of the nesting season.
- Adult birds are unlikely to be physically harmed by livestock and many bird species are capable of re-nesting in the same season.

Effects to Priority Habitats - The following table summarizes the predicted effects of the grazing alternatives to priority habitats for the birds of conservation concern with potential to occur in the area.

Table 26: LeClerc Creek Range Allotment - summary of effects to priority habitats for birds of conservation concern

Bird species	Priority habitats	Alternative	Summary of direct and indirect project effects
flamulated owl, Cassin's finch calliope hummingbird, Williamson's sapsucker, olive-sided flycatcher	dry conifer forests, mixed mesic conifer forests, subalpine forests, snags, burned areas	All	The allotment contains few acres of dry, park-like forest stands. Subalpine forests would remain relatively inaccessible to cattle on this allotment. Continued livestock grazing would have no or questionable impacts to existing conifer trees, snags or overhead tree canopy closure. Livestock impacts to small trees and shrubs in stand understories would continue to be insignificant or discountable. Continued grazing should not impair the development of plantations into fully stocked stands (pers. comm. with P. Hass 2013).
black swift, gray-crowned rosy finch	alpine areas, rock features, waterfalls	All	Livestock do not appear to be accessing alpine areas on the allotment. Livestock avoid rock features. No known waterfalls on the allotment.

Williamson's sapsucker, Cassin's finch	hardwood trees	A (no change)	Hardwood trees are uncommon to rare on this allotment. Livestock browsing would continue to suppress hardwood regeneration on some sites; particularly adjacent to key grazing areas. Selected aspen stands would be protected with fencing or other means.
		B (no grazing)	Aspen and other hardwoods would no longer be impacted by livestock browsing. Hardwood regeneration at locally impacted sites would likely release.
		C	Allotment reduced in size by approximately 2,775 acres. Hardwood regeneration on those acres would no longer be impacted by livestock browsing. Selected aspen stands protected with fencing or other means.
		D	Allotment increased in size by approximately 2,453 acres. Most of those acres are inaccessible to livestock due to steep topography or dense forest stands. Selected aspen stands protected with fencing or other means.
willow flycatcher, calliope hummingbird, Cassin's finch	riparian areas	A	Livestock browsing of riparian shrubs would continue to locally suppress shrub density and diversity. Riparian forbs and sedges could be mechanically damaged or over-utilized in some locations.
		B	Livestock use of riparian areas would cease. Vegetation in local affected areas would become more dense, complex and diverse.
		C	Allotment boundary changes would result in approximately 140 fewer acres of streamside riparian habitats and approximately 93 fewer acres of wetlands accessible to cattle. Better distribution of livestock due to new range improvements. Monitoring / adaptive management keyed to the condition of riparian vegetation. This should lead to increased livestock use of upland forage and less time spent in lowland riparian areas.
		D	Same as Alternative C except that there would be approximately 20 additional acres of streamside riparian habitats and approximately 43 fewer acres of wetlands accessible to livestock.
calliope hummingbird, loggerhead shrike, flamulated owl	meadows, parklands	A	Allotment contains very few acres of dry parklands. Livestock grazing of meadows would tend to maintain grass vigor and keep these sites in an open, productive condition. However, some sites would continue to be re-grazed in the same growing season, due to poor controls of livestock movement. Livestock would continue to be a vector for noxious weed spread.
		B	Meadows would exhibit fewer areas of bare ground and more native plants over time. Potential long-term reduction in grass vigor in the absence of intensive, periodic grazing. Potential reduction in meadows overall, due to forest succession. This alternative would require the most frequent meadow maintenance (burning, conifer tree removal, etc.). Livestock would no longer be a factor in the spread of noxious weeds.
		C	Approximately 268 fewer acres of meadow habitats on the allotment. Periodic maintenance of meadows required to maintain grass vigor and forestall conversion of these sites to forestland. Better distribution of livestock due to new range improvements and adaptive management should reduce the potential for meadows to be re-grazed in the same growing season. Somewhat reduced risk of noxious weed spread.
		D	Same as Alt. C except the acreage of meadow habitats on the allotment would be similar to the existing condition.

Cumulative Effects – As described in the preceding table, the livestock management alternatives would have no, or insignificant / discountable effects to; dry conifer forests, mixed mesic conifer forests, subalpine forests, snags, burned areas, alpine areas, rock features, or waterfalls. Thus, we expect there would be no cumulative effects to these priority landbird habitats on the Forest.

See the previous section on beavers for a discussion of cumulative effects to hardwood habitats utilized by landbirds. See the previous section on grizzly bears for a discussion of cumulative effects to riparian and meadow / parkland habitats utilized by landbirds.

4. Conclusion - In some locations on the LeClerc Creek Grazing Allotment, livestock grazing is suppressing hardwood tree recruitment, and reducing the density and complexity of riparian vegetation. None of these sites are so badly degraded that they could not recover if livestock use was removed or decreased in intensity. Effects to these priority landbird habitats are being reduced or mitigated with other projects that promote hardwoods (timber sales, fencing of aspen stands), or impede livestock access to riparian areas (stream exclosures, road relocations, large wood installation in stream channels, etc.). See Appendix C for a list of projects completed and proposed in the watershed. These and similar projects we are completing across the Forest are in step with the conservation strategies for priority landbird habitats provided by Altman (2000).

With Alternatives C and D, new range infrastructure, and monitoring and adaptive management should initiate an upward trend in hardwood regeneration and riparian habitat values that have been impacted by livestock. Meadows removed from the allotment due to shifts in the allotment boundaries, would require active maintenance to keep them in an open and productive condition over time.

Alternative B (no grazing) would best meet the conservation strategies for deciduous trees and shrublands, and riparian habitats. This alternative would require the greatest degree of active meadow maintenance (prescribed burning, hand-felling of young conifers) to keep these sites from being lost to forest succession over time. Completion of this work would be subject to available funding.

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Appendix A: Risk assessment procedure for TES
Forest Service (Region 6) Supplement 2600-90-5, FSM 2672.24b-2676.17e

Consequence of Adverse Effects

- Low: None, or questionable adverse effect on habitat or population. No cumulative effects expected.
- Moderate: Possible adverse effects in habitat or on population. Cumulative effects possible.
- High: Obvious adverse effects on habitat or population. Cumulative effects probable.

Likelihood of Adverse Effects

- None: Activity will not affect habitat or population (no further risk assessment is needed)
- Low: Activity controllable by seasonal or spatial restrictions and not likely to affect habitat or populations.
- Moderate: Activity not completely controllable or intense administration of project needed to prevent adverse effects on habitat or populations.
- High: Activity not controllable and adverse effects on habitat or populations likely to occur.

NOTE: Any adverse effects to federally listed species will require initiation of consultation process.

Risk Index

- None=0
Low=1
Moderate=5
High=10

Multiply Consequence value times Likelihood value to determine Risk value.

Risk Value	Action
0	Proceed with project.
1-10	Proceed as planned. Informal consultation with USDI Fish and Wildlife Service
10-50	Modify project if feasible to reduce risk. Formal consultation if risk not reduced.
50-100	Project must be modified, cancelled or have further analysis done. Formal consultation if project proceeds.

NOTE: Subsequent activities in the assessment area with index of 25 or more must be modified if previous effects have not been mitigated.

Appendix B: Viability outcomes for MIS (Youkey 2012)

The five viability outcomes (modified from Raphael et al. 2001) defined below describe the probability that the Colville National Forest (CNF) could support a population of management indicator species (MIS). The outcome assigned to each MIS is based on current habitat conditions on the forest, and risk factors that could influence the persistence of the species on the forest. The term “suitable environment” refers to the combination of habitat and risk factors that influence the probability of occupancy and demographic performance of a MIS.

Outcome A - Suitable environments are broadly distributed and of high abundance. The combination of distribution and abundance of environmental conditions provides opportunity for continuous or nearly continuous intra-specific interactions for the MIS species. MIS species with this outcome are likely well-distributed throughout the planning area.

Outcome B - Suitable environments are broadly distributed and of high abundance, but there are gaps where suitable environments are absent or only present in low abundance. However, the disjunct areas of suitable environments are typically large enough and close enough to permit dispersal among subpopulations and to allow the species to potentially interact as a meta-population. Species with this outcome are likely well-distributed throughout most of the planning area.

Outcome C - Suitable environments are distributed frequently as patches and/or exist at low abundance. Gaps where suitable environments are either absent or present in low abundance are large enough such that some subpopulations are isolated, limiting opportunity for intra-specific interactions. There is opportunity for subpopulations in most of the planning area to interact, but some subpopulations are so disjunct or of such low density that they are essentially isolated from other populations. For species for which this is not the historical condition, reduction in the species' range in the planning area may have resulted. Species with this outcome are likely well-distributed in only a portion of the planning area.

Outcome D - Suitable environments are frequently isolated and/or exist at very low abundance. While some of the subpopulations associated with these environments may be self-sustaining, there is limited opportunity for population interactions among many of the suitable environmental patches. For species for which this is not the historical condition, reduction in species' range in the planning area may have resulted. These species are likely not well-distributed in the planning area.

Outcome E - Suitable environments are highly isolated and exist at very low abundance, with little or no possibility of population interactions among suitable environmental patches, resulting in strong potential for extirpations within many of the patches, and little likelihood of re-colonization of such patches. There has likely been a reduction in the species' range from historical conditions, except for some rare, local endemics that may have persisted in this condition since the historical time period. Species with this outcome are not well-distributed throughout much of the planning area.

Appendix C: Other recent, ongoing or proposed projects / activities in the LeClerc Grizzly Bear Management Unit.

Project / activity (agency / company)	Project / activity type	Years active	Season of activity	Elk WR?	Lynx range?	Caribou CMU?	General effects to forest vegetation
Yocum Lake TS (Pend Oreille County)	vegetation management	2008 - 2013	summer / fall	yes	no	no	Approx. 23 acres of uneven-aged harvest.
Scotchman & Hanlon Stewardship Projects (FS)		2011 - 2016	logging - winter site prep.- sum / fall tree planting - spring, fall	yes	no	no	Approx. 912 acres of created openings. Approx. 3,735 acres of uneven aged harvest. Up to 4,646 acres site prep (mastication, grapple pile, under-burning).
Private landowner TS		2012 - 2014	likely summer / fall	yes	no	no	Approx. 20 acres uneven-aged harvest west of Caldwell Lake.
Spike Camp TS, 6-Pack TS, Debris Flow TS (Stimson)		2013	likely summer / fall	no	yes	no	Approx. 475 acres of created openings (356 in LeClerc LAU). Approx. 105 acres of uneven-aged harvest (30 acres in LeClerc LAU).
Pre-commercial thin (FS)		2013 - 2016	summer / fall	yes	no	no	Approx. 30 acres. No impacts to hiding cover. Slight improvement in green forage values.
Pre-commercial thin (Stimson)			summer / fall	yes	yes	no	Approx. 220 acres. Potential reduction in snowshoe hare habitat quality over approx.123 acres thinned in LeClerc LAU.
New road construction (Stimson)	road construction	2014	summer / fall	yes	no	no	Vegetation removed over approx. 0.8 miles of new road corridor. Road closed to the public.
MB LeClerc Road Re-location Project (FS, Stimson)	road re-location out of riparian area, fish passage restored	2011 - 2013	summer / fall	yes	no	no	Mostly upland vegetation removed over approx. 2.3 miles of new road corridor. Riparian & upland veg. restored over approx. 2.6 miles of old roadbed, over time.
Upper MB LeClerc Road Re-location Project (FS, Stimson)	road re-location to restore fish passage	2016 - 2017	summer / fall	no	yes	yes	Mostly upland vegetation removed over approx. 0.5 miles of new road corridor. Riparian & upland veg. restored over approx. 1.2 miles of old roadbed, over time.
Road re-construction / maintenance (FS, county, private)	grading, ditching, etc.	ongoing	summer / fall	yes	yes	yes	No impacts.
FS road easements / use permits issued to private parties	easements / permits for use of existing roads	ongoing	year-round	yes	yes	yes	
July Mill Prescribed Burn (FS / Rocky Mountain Elk Foundation)	elk habitat improvement	2015- 2016	1-3 total days in October, April, or May	yes	yes	no	Approx. 217 acres of grass meadows, dry forest parklands, and shrublands restored / maintained.

Project / activity (agency / company)	Project / activity type	Years active	Season of activity	Elk WR?	Lynx range?	Caribou CMU?	General effects to forest vegetation
Ballpark Meadow riparian fencing (FS)	riparian protection	2013	summer / fall	yes	no	no	Improvements in riparian vegetation along approx. 700 feet of the W. Branch LeClerc Creek over time.
Food storage locker installation (FS)	human / wildlife conflict reduction	2013-2014	summer / fall	yes	no	no	Small scale removal of vegetation where cement pads are sited in dispersed campsites.
In-stream large wood placement (Public Utility District #1)	fish habitat improvement	2013 - 2016	late summer / fall	no	yes	yes	Small scale damage to vegetation where heavy equipment is operated
Culvert replacements (FS, PUD, private)	fish passage restoration	ongoing	late summer	yes	yes	yes	Small scale removal / damage to vegetation where heavy equipment is operated.
Non-motorized recreation	camping, hunting, fishing, etc.	ongoing	year- round	yes	yes	yes	Small scale impacts to vegetation from trampling, vandalism of trees at dispersed campsites.
Motorized recreation	OHV riding	ongoing	warm months	yes	yes	yes	Small scale impacts to vegetation from illegal trails, hill climbs, mud-bogging.
	snowmobile riding		winter				Insignificant or discountable.
Forest Damage Response Team program (FS)	OHV resource damage mitigation	ongoing	summer / fall	yes	yes	yes	Restoration of local sites damaged by OHV riders (hill climbs, pioneered trails, mud bogging areas, etc.)
FS special use permits for forest products collection	firewood, berries, mushrooms, Christmas trees, landscape rock, etc.	ongoing	summer / fall	yes	yes	yes	No impacts to green forage plants. Local reductions in snags, berry crops, mushrooms, small conifers, beargrass, etc., mainly along open roads.
FS special use permits for utilities (PUD, Pend Oreille Telephone)	utility corridor maintenance	ongoing	year-round	yes	no	no	Maintenance of narrow, linear forest openings (small tree removal, brush topping).
FS special use permits for water developments	domestic water supply	ongoing	year-round	yes	no	no	No new permits. Insignificant or discountable.
Weed monitoring, prevention & control (FS)	noxious weed control	ongoing	summer	yes	yes	yes	Should lead to local long-term improvements in existing green forage resources.
Forest inventory and monitoring (FS, PVT)	research, survey, and monitoring	ongoing	warm months	yes	yes	yes	None
Wolf trapping (WDFW), large carnivore survey (Kalispel Tribe, IDFG)		ongoing	year-round	?	possibly	possibly	

Appendix D: LeClerc Creek Range Allotment Monitoring and Adaptive Management Strategy (part 1)

Resource Parameter	Water Quality(~350 acres ¹)	Streambank Integrity(~350 acres)	Riparian Shrub Habitat (~350 acres)
Objective/ Management Goal	Maintain water temperatures that meet or exceed Clean Water Act and Forest Plan (INFISH) standards OR trend towards meeting these standards.	Stream bank stability and stream channel morphology stays within established standards (Forest Plan 1988).	Riparian shrubs are sufficiently contributing to fish habitat including; shading, nutrients (leaf fall), and forage inputs. Riparian shrub lands are providing sufficient habitat complexity and concealing cover for landbirds, furbearers, and other terrestrial wildlife.
Monitoring Method	Temperature data recorders (e.g. HOBOs). Total Maximum Daily Load (TMDL) every year per Dept. Of Ecology agreement.	Use Multiple Indicator Monitoring (MIM) Permanent photo points established after decision	Cole browse Permanent photo points Visual estimate
Monitoring Standard / Threshold	Stream temperatures do not exceed 12°C subsequently after 10 years due to cattle grazing.	No more than 20% stream bank alteration	No more than 40 % woody browse utilization <i>and</i> different age classes are present, including regeneration.
If Threshold is exceeded	<p>Water Quality: If standards are not being met or trending towards meeting standards after 10 years of monitoring, implement appropriate management strategies 1-4 (below)</p> <p>Streambank and Riparian Shrubs: If standards are not trending towards the management goal after 3 years of monitoring, implement management strategies 1 - 4 (below) as necessary / feasible.</p> <p>If standards are still not trending towards the management goal after 3 more years of monitoring, implement management strategies 1-4 (below) as necessary / feasible</p> <p>If standards are still not trending towards the management goal after the 9th year of monitoring, re-initiate NEPA review of the allotment.</p>		
Potential Adaptive Management Strategies	<ol style="list-style-type: none"> <u>Implement strategies for reducing re-grazing of pastures:</u> <ul style="list-style-type: none"> install additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures, alter pasture rotation, alter use periods for pastures, increase pasture fence maintenance frequency, increase range riding. <u>Implement strategies for reducing livestock use of riparian habitats:</u> <ul style="list-style-type: none"> install additional upland water developments, increase range riding. <u>Implement strategies for reducing site-specific impacts to riparian habitats / function</u> <ul style="list-style-type: none"> re-build / armor livestock crossing / watering structures, install exclosure fencing around impacted riparian areas plant native vegetation to shade stream and stabilize banks. <u>Reduce livestock numbers and / or grazing season.</u> 		

¹ Approximate acreage was estimated through digitization of polygons on aerial imagery in conjunction with knowledge of the area conditions. These acres are accessible to cattle grazing, sensitive, and were analyzed for the possible implementation of any of the strategies.

Resource Parameter	<i>Water Quality(~350 acres¹)</i>	<i>Streambank Integrity(~350 acres)</i>	<i>Riparian Shrub Habitat (~350 acres)</i>
Effects of implementation	Short term adverse effects during installation of water quality if additional hardened stream crossings are installed, long term beneficial effects to water quality and riparian areas	Short term adverse effects if additional hardened stream crossings are installed, long term beneficial effects to the streambanks and riparian areas	Riparian shrub populations would start to become stable or increasing. They would be sufficiently contributing to fish and wildlife habitat values such as stream shading.
Monitoring Timing	Water temperature – every year for ten years to figure out trend	Annually for first 3 years after the Middle Branch LeClerc fence is completed. If stable conditions persist, every 5 years at the end of the grazing or growing season, whichever is later	annually, end of growing season
Evaluation Period	Water temperature: annually until compliance is reached	Refer to MIM 2011 technical reference	5 years
Responsibility	Colville National Forest (CNF) hydrologist	CNF Specialists	CNF Specialists
Proposed Monitoring Locations	West, Middle, and East Branches of LeClerc Creek at current established sites for water temperature.	West and Middle Branches of LeClerc Creek and their tributaries At established monitoring sites as determined necessary.	Forest Road (FR) 1935011 riparian shrubfield, Whiteman Creek wetland (below FR 1935), At established monitoring sites as determined necessary.

Appendix D: LeClerc Creek Range Allotment Monitoring and Adaptive Management Strategy (part 2)

Resource Parameter	<i>Green forage vigor and productivity</i>	<i>Sensitive plants</i>
Objective/Management Goal	The range condition meets utilization standards to achieve forage conditions favorable for grizzly bears (IGBC et al. 1986). Vegetation will meet established standards.	Plant populations are stable or increasing over time.
Monitoring Method	Permanent stubble height transects Permanent photo points	Revisit selected plant populations annually for 3 years to establish a base population size and area. Use standard sighting form to document revisits, including numbers of plants and area, evidence of livestock utilization and trampling, and presence of noxious weeds.
Monitoring Standard/Threshold	Minimum riparian stubble height = 6 inches Utilization = 55% for upland and 45% for forested areas	Evaluate any changes in the population in the context of the expected range of fluctuations and in consultation with the Forest Botanist determine the need for more intensive surveys or management actions, and provide recommendations for noxious weed control.
If Threshold is exceeded	If standards are exceeded after 3 years of monitoring, implement management actions 1 - 3 (below) as necessary / feasible. If standards are still not met after 3 more years of monitoring, implement management action 4. If standards are still not being met after 3 more years of monitoring, re-initiate NEPA review of the allotment.	
Potential Adaptive Management Strategies	<ol style="list-style-type: none"> 1. <u>Implement strategies for reducing re-grazing of pastures:</u> <ul style="list-style-type: none"> • install additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures, • increase pasture fence maintenance frequency, • increase range riding. 2. <u>Block livestock access to sensitive plant populations with fencing or other means</u> 3. <u>Reduce livestock numbers and / or grazing season.</u> 	
Effects of implementation	Green forage would be grazed to standard by livestock, and then rested for the remainder of the season. This would remove grass thatch and stimulate vigorous stem growth. Wildlife which avoid cows (such as elk) would be able to take full advantage of this re-growth, without being disturbed / displaced by cattle.	Sensitive plant populations would be stable or increasing in number and extent.
Responsibility	CNF Range staff	CNF Botanist
Timing	annually, end of growing season	Revisit every 3 years, after baseline is established.
Proposed Monitoring Locations	MIM sites previously listed Upland sites assessed by landscape appearance method	Known sensitive plant sites.

The range specialist or range staff and resource specialists would coordinate collection of monitoring data. If monitoring indicates that standards for riparian or upland habitats, compliance, and utilization are not being met, adjustments in the way the allotment is managed would be initiated. The strategies are listed above in tables 4 and 5. Any sites where new range improvement projects are proposed for construction would have all applicable surveys completed and clearances issued.

Appendix E: LeClerc Creek Range Allotment maps